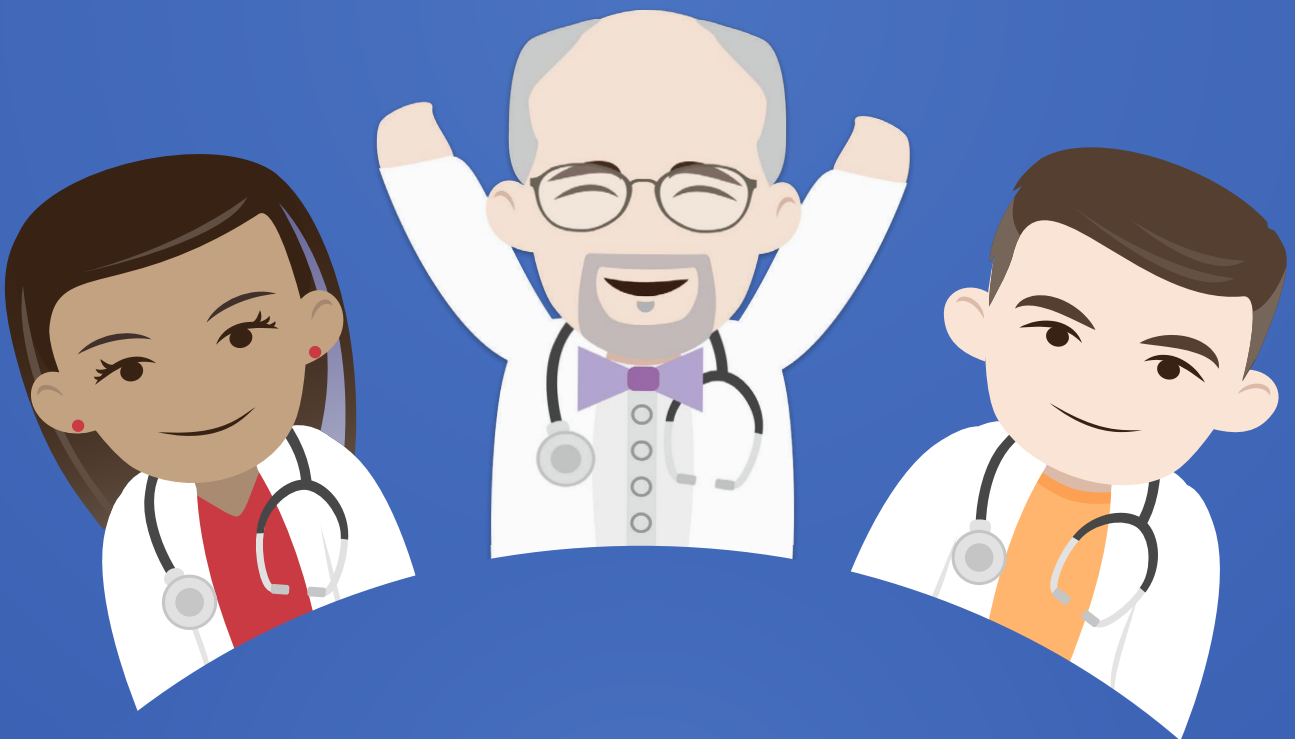


CARDIAC CT MASTERY WORKSHOP

HANDBOOK



John A. Rumberger
PhD MD FACC FSCCT

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ABBREVIATION LIST

A

AAA	abdominal aortic aneurysm
AAOCA	anomalous aortic origin of a coronary artery
ABP	arterial blood pressure
AF	atrial fibrillation
AP	anterior-posterior
ARVD	arrhythmogenic right ventricular dysplasia
ASD	atrial septal defect
ASO	atherosclerosis
AVR	aortic valve replacement

B

BAP	brightness area product
BP	blood pressure
bpm	beats per minute

C

CABG	coronary artery bypass graft
CAC	coronary artery calcium (score)
CAD	coronary artery disease
CBC	complete blood count
CCTA	cardiac computed tomography angiography
CHF	congestive heart failure
CMR	cardiac magnetic resonance
COPD	chronic obstructive pulmonary disease
CPR	curved planar reformation
CT	computed tomography
CTA	computed tomography angiography
CVD	cardiovascular disease

D

D1	first diagonal
D2	second diagonal
DES	drug-eluting stent

E

EBCT	electron beam computerized tomography
ECG	electrocardiogram
ED	end-diastole
EDV	end-diastolic volume
EF	ejection fraction
ER	emergency room
ES	end-systole
ESV	end-systolic volume

F

FFR	fraction flow reserve
FRS	Framingham risk score

G

GEF	global ejection fraction
-----	--------------------------

H

HCM	hypertrophic cardiomyopathy
HDL	high-density lipoprotein (cholesterol)
HR	heart rate
HU	Hounsfield unit

I

IAS	interatrial septum
ICD	implantable cardioverter-defibrillator

K

kVp	kilovolt peak
-----	---------------

L

LA	left atrium
LAA	left atrial appendage
LAD	left anterior descending
LCA	left coronary artery
LCC	left coronary cusp
LCX	left circumflex
LDL	low-density lipoprotein (cholesterol)
LIMA	left internal mammary artery
LM	left main
LV	left ventricle
LVEF	left ventricular ejection fraction
L VH	left ventricular hypertrophy
LVOT	left ventricular outflow tract

M

MACE	major adverse cardiac events
mAs	milliampere-second
MDCT	multidetector computed tomography
MESA	Multi-Ethnic Study of Atherosclerosis
MIP	maximum intensity projection
MPI	myocardial perfusion imaging
MPR	multiplanar reformation / reconstruction / reformatting
MRA	magnetic resonance angiogram
MRI	magnetic resonance imaging

N

NCC	non-coronary cusp
NSAID	nonsteroidal antiinflammatory drug
NSR	normal sinus rhythm

O

OM	obtuse marginal
OM1	first obtuse marginal
OM2	second obtuse marginal

P

Pa	proximal pressure
PCA	percutaneous coronary angioplasty
PCI	percutaneous coronary intervention
Pd	distal pressure
PDA	posterior descending artery
PFO	patent foramen ovale
PLB	posterior lateral branch
PTCA	percutaneous transluminal coronary angioplasty
PV	pulmonary veins

Q

QCA	quantitative cardiac angiography
-----	----------------------------------

R

RA	right atrium
RBC	red blood cell
RCA	right coronary artery
RCC	right coronary cusp
RIMA	right internal mammary artery
RIND	reversible ischemic neurological deficit
RWMA	regional wall motion abnormalities

S

SAVR	surgical aortic valve replacement
ST	sinotubular
SVG	saphenous vein graft

T

TAVI	transcatheter aortic valve insertion
TAVR	transcatheter aortic valve replacement
TC	total cholesterol
TEE	transesophageal echocardiography
TTE	transthoracic echocardiography
TIA	transient ischemic attack

V

VRT	3d volume rendering / reconstruction transformation
VSD	ventricular septal defect

W

WBC	white blood cell
-----	------------------

EXAMPLE OF DETAILED CARDIAC CT REPORT

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Patient name: NM

Patient gender: M

Referring physician:

Modality: 64-slice MDCT with cardiac CT protocol.

Summary of findings and recommendations:

Normal LV size and global systolic function. Normal valvular function and extra-coronary cardiac anatomy. There is mild, eccentric, non-obstructive plaque in the mid-LAD, the first septal branch, the first diagonal branch, the distal RCA, and the posterior lateral branch. There is also mild, eccentric, complex (calcified and non-calcified), and non-obstructive plaque in the large second diagonal branch. Finally, there is moderate, eccentric, but non-obstructive plaque in the distal

LAD. The non-dominant LCX is normal and the proximal and mid RCA is normal. The coronary calcium score is 50, placing the value at the 78th percentile for age.

There is no evidence for obstructive coronary disease and no further cardiac testing is suggested at this time; however, an aggressive risk factor intervention program should be initiated.

Indication:

NM is a 46-year-old male with a family history of premature CAD, high cholesterol, and atypical chest pain. He had a stress test and the results were equivocal for ischemia in the inferior LV wall. I have

reviewed the clinical record and / or nursing notes and agree with the clinical indications for the requested cardiac CT procedure.

Procedure:

Oral metoprolol and sublingual nitroglycerine (0.4 mg) was given prior to imaging. A non-contrast CT of the heart was done using a standardized protocol to define the coronary calcium score. This was immediately followed by a contrast enhanced CT imaging of the heart, coronary arteries, and

proximal great vessels using a 64-slice CT scanner. Total amount of intravenous contrast administered was < 100 mL. The patient was observed for at least 15 minutes after the procedure and then the intravenous line was removed. There were no complications and the patient was discharged with

instructions to force fluids for the remainder of the day. The images were reviewed on an independent computer workstation with thin-section 2D and 3D volume images.

Detailed interpretation:

LCA: normal

LAD:

- **Proximal:** normal
- **Mid:** mild, eccentric, non-obstructive plaque
- **Distal:** moderate, eccentric, non-obstructive plaque
- **D1:** mild, eccentric, non-obstructive plaque
- **D2:** mild, eccentric, complex (both calcified and non-calcified) non-obstructive plaque

LCX: dominance = no

- **Proximal:** normal
- **Mid:** normal
- **Distal:** normal
- **OM1:** normal
- **OM2:** normal

RCA: dominance = yes

- **Proximal:** normal
- **Mid:** normal
- **Distal:** moderate, eccentric, non-obstructive plaque
- **PDA:** normal
- **PL:** mild, eccentric, non-obstructive plaque

LV function:

- **LV size:** normal, 172 mL EDV
- **LV wall motion:** normal in all myocardial segments
- **LV EF:** 62%

LA, RA, RV: normal LA, RA size, and normal RV size and systolic function

Pericardium: normal

Coronary calcium score: 50; 78th percentile for age and gender

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CVD RISK CALCULATOR FOR WOMEN

TRADITIONAL FRAMINGHAM RISK

Use this information to assess your patient's current risk for cardiovascular disease (CVD). After answering the six questions, add up the total points and then use the graph below to determine the CVD risk.

1. Age?

Age	Points
35–39	-4
40–44	0
45–49	3
50–54	6
55–59	7
60–64	8
65–69	8
70 and over	8

2. Smoker?

	Points
Yes	2
No	0

3. Diabetes?

	Points
Yes	4
No	0

4. What is their blood pressure?

Systolic BP	Diastolic BP				
	< 79	80–84	85–89	90–99	> 100
Less than 120	-3	0	0	2	3
120–129	0	0	0	2	3
130–139	0	0	0	2	3
140–159	2	2	2	2	3
160 or more	3	3	3	3	3

Points

5. What is their total cholesterol value?

Total cholesterol (mg/dL)	mmol/L	Points
Less than 160	< 4.14	-2
160–199	4.14–5.15	0
200–239	5.17–6.18	1
240–279	6.21–7.21	1
280 and over	> 7.24	3

6. What is their HDL (good) cholesterol value?

HDL (mg/dL)	mmol/L	Points
Less than 35	< 0.90	5
35–44	0.90–1.14	2
45–49	1.16–1.27	1
50–59	1.29–1.52	0
60 and over	> 1.55	-3

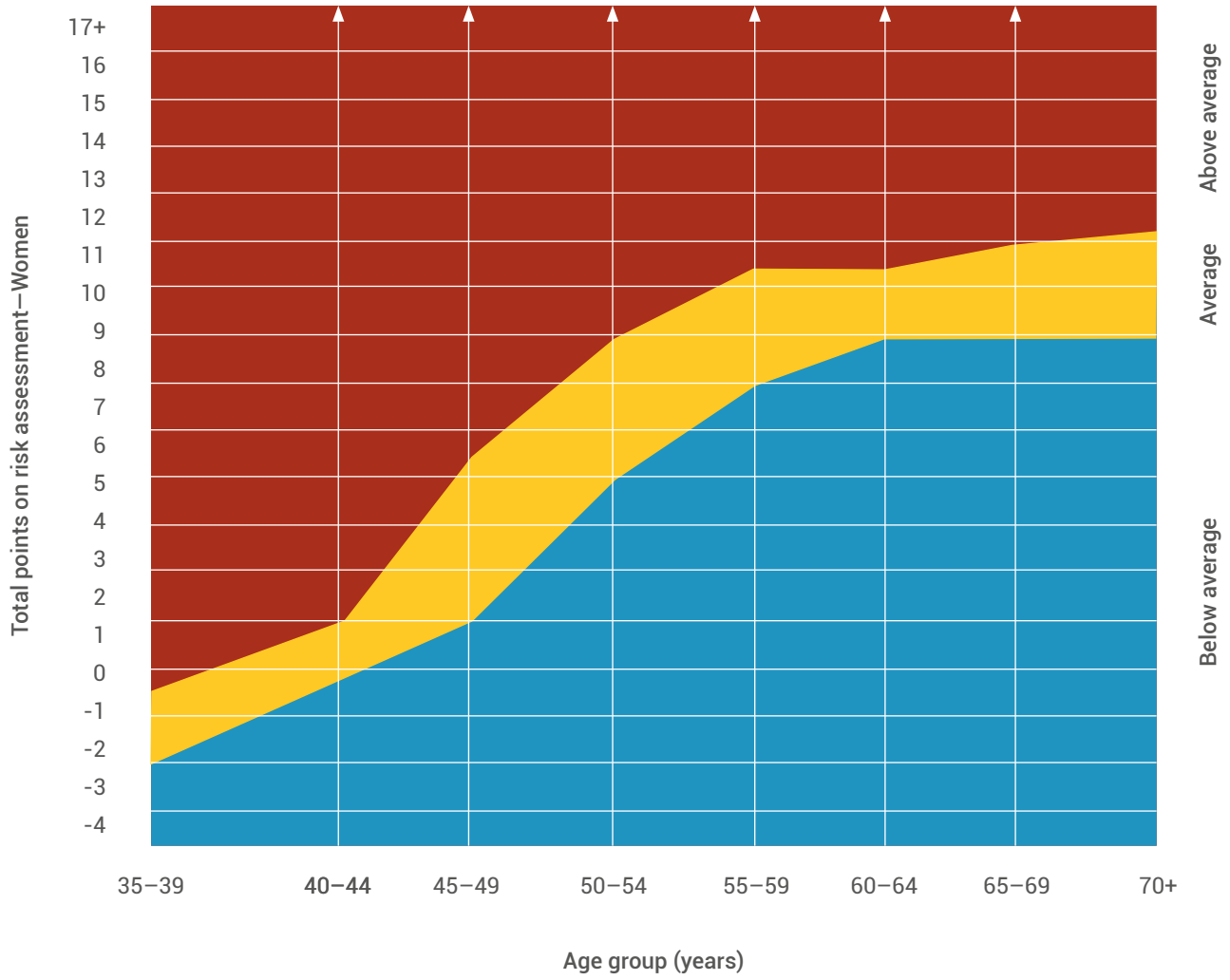
Score (total points):

CVD risk:

Below average (blue)

Average (yellow)

Above average (red)



To determine the CVD risk, find your patient's score, run your finger across the line to match their age and place an X at this point.

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CVD RISK CALCULATOR FOR MEN

TRADITIONAL FRAMINGHAM RISK

Use this information to assess your patient's current risk for cardiovascular disease (CVD). After answering the six questions, add up the total points and then use the graph below to determine the CVD risk.

1. Age?

Age	Points
35–39	0
40–44	1
45–49	2
50–54	3
55–59	4
60–64	5
65–69	6
70 and over	7

2. Smoker?

	Points
Yes	2
No	0

3. Diabetes?

	Points
Yes	2
No	0

4. What is their blood pressure?

Systolic BP	Diastolic BP				
	< 79	80–84	85–89	90–99	> 100
Less than 120	0	0	1	2	3
120–129	0	0	1	2	3
130–139	1	1	1	2	3
140–159	2	2	2	2	3
160 or more	3	3	3	3	3

Points

5. What is their total cholesterol value?

Total cholesterol (mg/dL)	mmol/L	Points
Less than 160	< 4.14	-3
160–199	4.14–5.15	0
200–239	5.17–6.18	1
240–279	6.21–7.21	2
280 and over	> 7.24	3

6. What is their HDL (good) cholesterol value?

HDL (mg/dL)	mmol/L	Points
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35–44	0.90–1.14	1
45–49	1.16–1.27	0
50–59	1.29–1.52	0
60 and over	> 1.55	-2

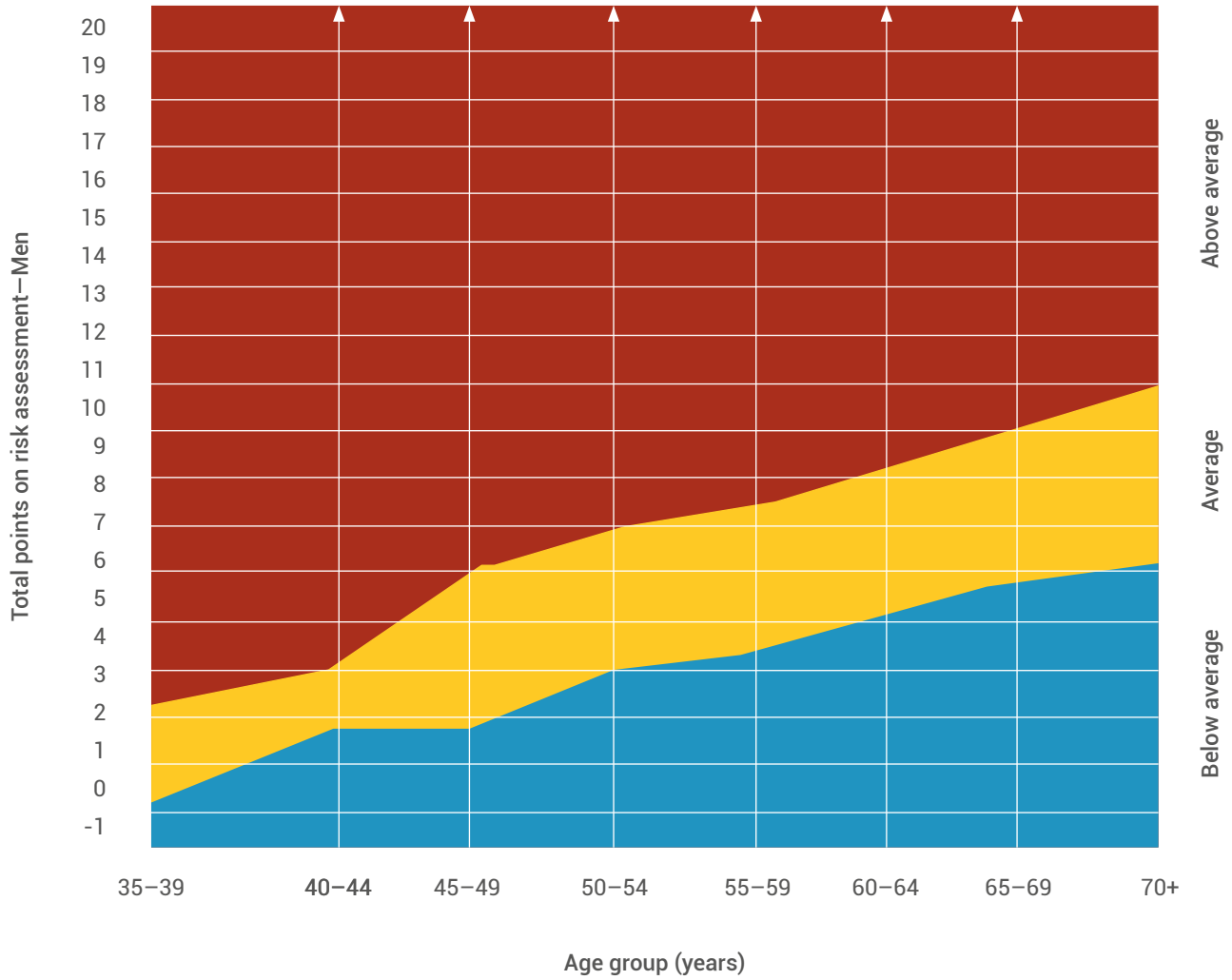
Score (total points):

CVD risk:

Below average (blue)

Average (yellow)

Above average (red)



To determine the CVD risk, find your patient's score, run your finger across the line to match their age and place an X at this point.

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READING LIST

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Case 32:

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Case 39:

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Case 40:

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Case 42:

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Case 43:

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Case 48:

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Case 49:

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APPENDIX



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