



29º  
CONGRESSO  
DE CARDIOLOGIA  
DO ESTADO DA BAHIA

10 a 13 de maio de 2017  
Bahia Othon Palace

## **ATEROSCLEROSE SUBCLÍNICA – COMO PESQUISAR?**

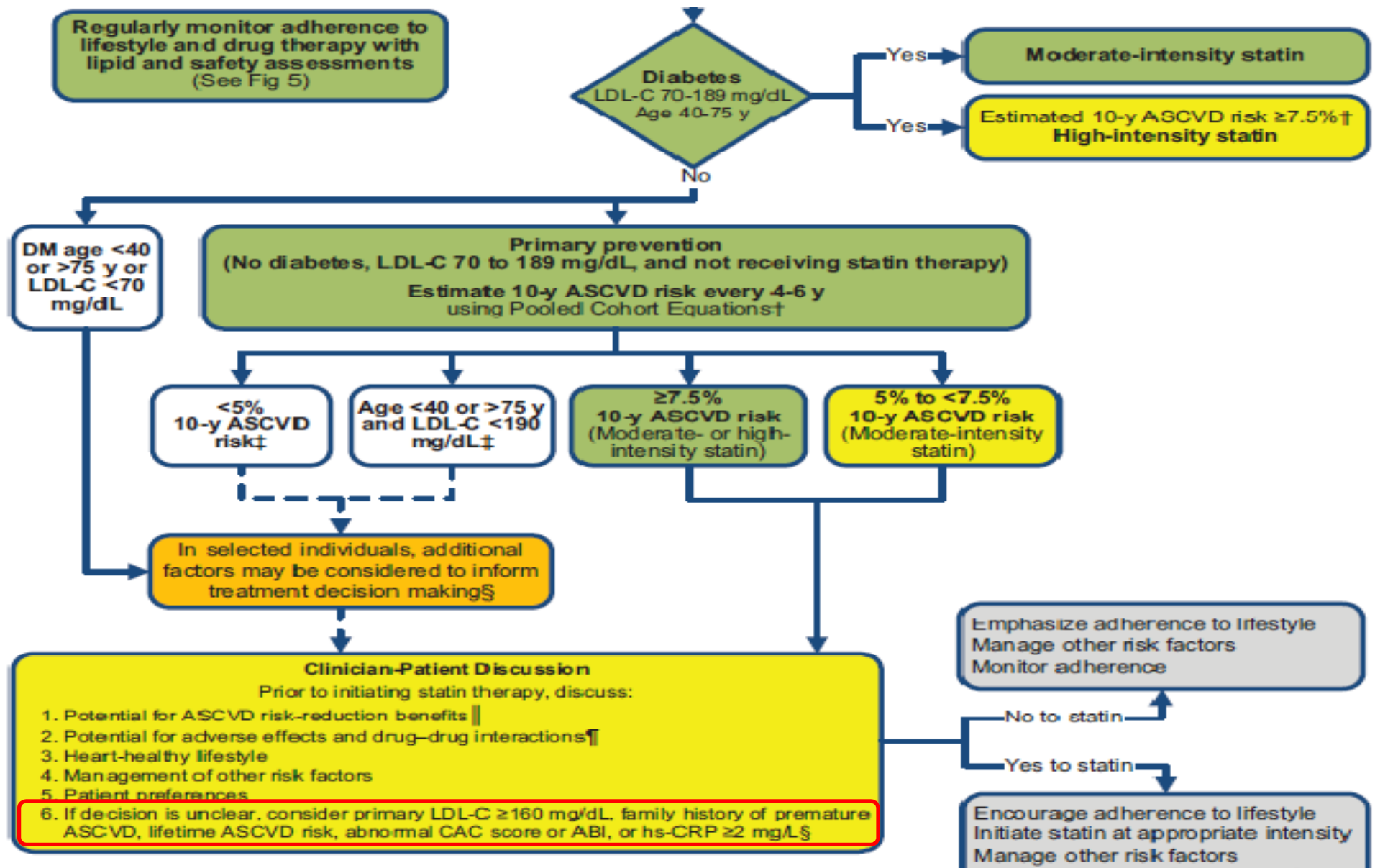
Augusto César (augustocesare@uol.com.br)

# ATEROSCLEROSE SUBCLÍNICA

<b>DADOS CLÍNICOS</b>	<b>HIPERTENSÃO ARTERIAL, INSUFICIÊNCIA RENAL CRÔNICA, DIABETES MELLITUS, ARTRITE REUMATOIDE, SAOS, DOENÇA PERIODONTAL, CÂNCER</b>
<b>IMAGEM</b>	<b>ECOCARDIOGRAFIA, ESPESSURA MEDIOINTIMAL DA CARÓTIDA, SCORE DE CÁLCIO, PET-TC, ANGIO-RNM (HIPERSINAL T1)</b>
<b>ASPECTOS FUNCIONAIS</b>	<b>ÍNDICE TONOZELO-BRAQUIAL</b>
<b>BIOMARCADORES</b>	<b>GENÉTICOS E INFLAMATÓRIOS (PCR-AS, FIBRINOGENIO, METALOPROTEINASES, TNF-<math>\alpha</math>, INTERLUCINAS, MOLÉCULAS DE ADESÃO)</b>

### Tabela III. Critérios de identificação de pacientes com alto risco de eventos coronarianos (Fase 1).

Doença aterosclerótica arterial coronária, cerebrovascular ou obstrutiva periférica, com manifestações clínicas (eventos CV)
Ateroclerose na forma subclínica, significativa, documentada por metodologia diagnóstica.
Procedimentos de revascularização arterial
Diabetes melito tipos 1 e 2
Doença renal crônica
Hipercolesterolemia familiar (HF)



**ESPESSURA  
MEDIOINTIMAL DA  
CARÓTIDA**

## Review

# Carotid Intima-Media Thickness for Atherosclerosis

Tomohisa Nezu, Naohisa Hosomi, Shiro Aoki and Masayasu Matsumoto

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## Review Article

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**kcj**

Korean Circulation Journal

## Is Carotid Artery Ultrasound Still Useful Method for Evaluation of Atherosclerosis?

Gee-Hee Kim, MD<sup>1</sup>, and Ho-Joong Youn, MD<sup>2</sup>

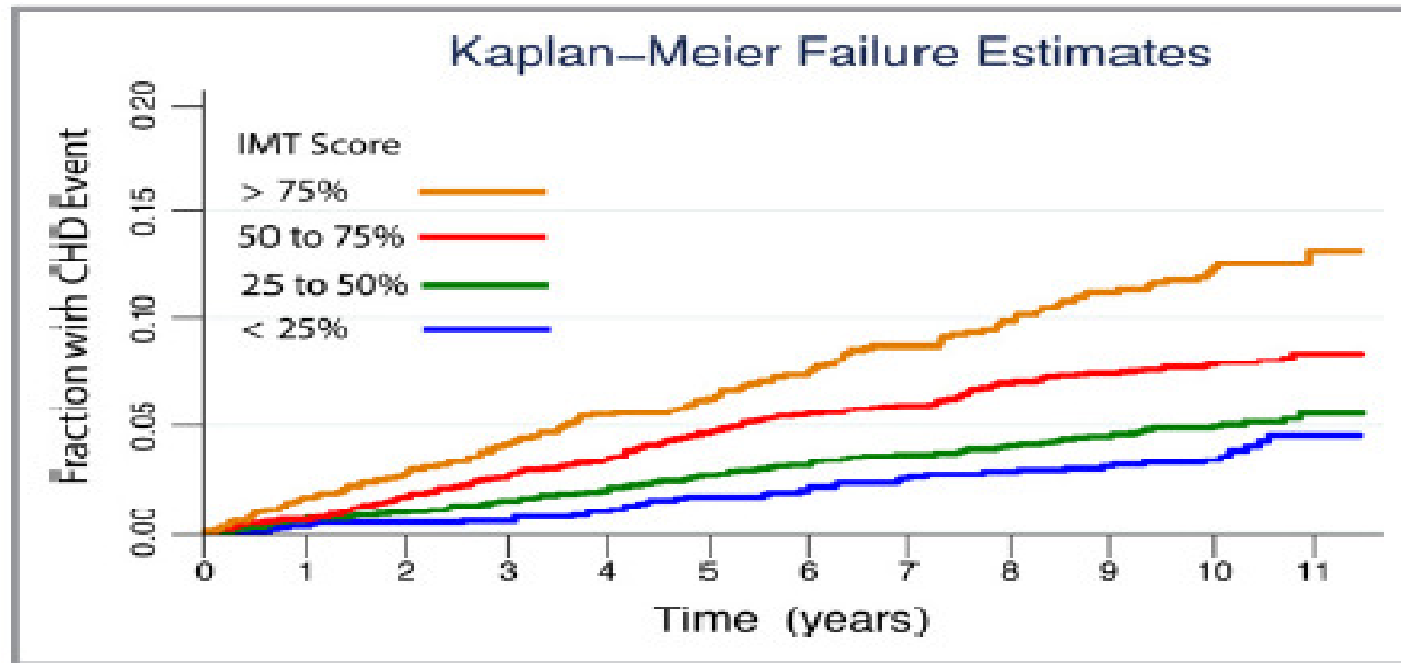
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# USG de Carótida e Espessura Mediointimal

1. Apesar de um pequeno aumento de risco (1,09 – IC 1,07-1,12), não houve impacto clínico na reclassificação dos Escores de Risco.
2. A discrepância grande entre as medidas de EMI, a reprodutibilidade e os valores de normalidade não ajustados para idade, gênero e etnia podem ter influenciado na ausência de resultados mais efetivos.
3. O uso associado da imagem a dados funcionais como velocidade de fluxo, e estruturais, como PET podem aumentar a acurácia do exame.
4. A associação com outros marcadores como Escore de Cálcio e PCR-as podem vir a ser úteis.

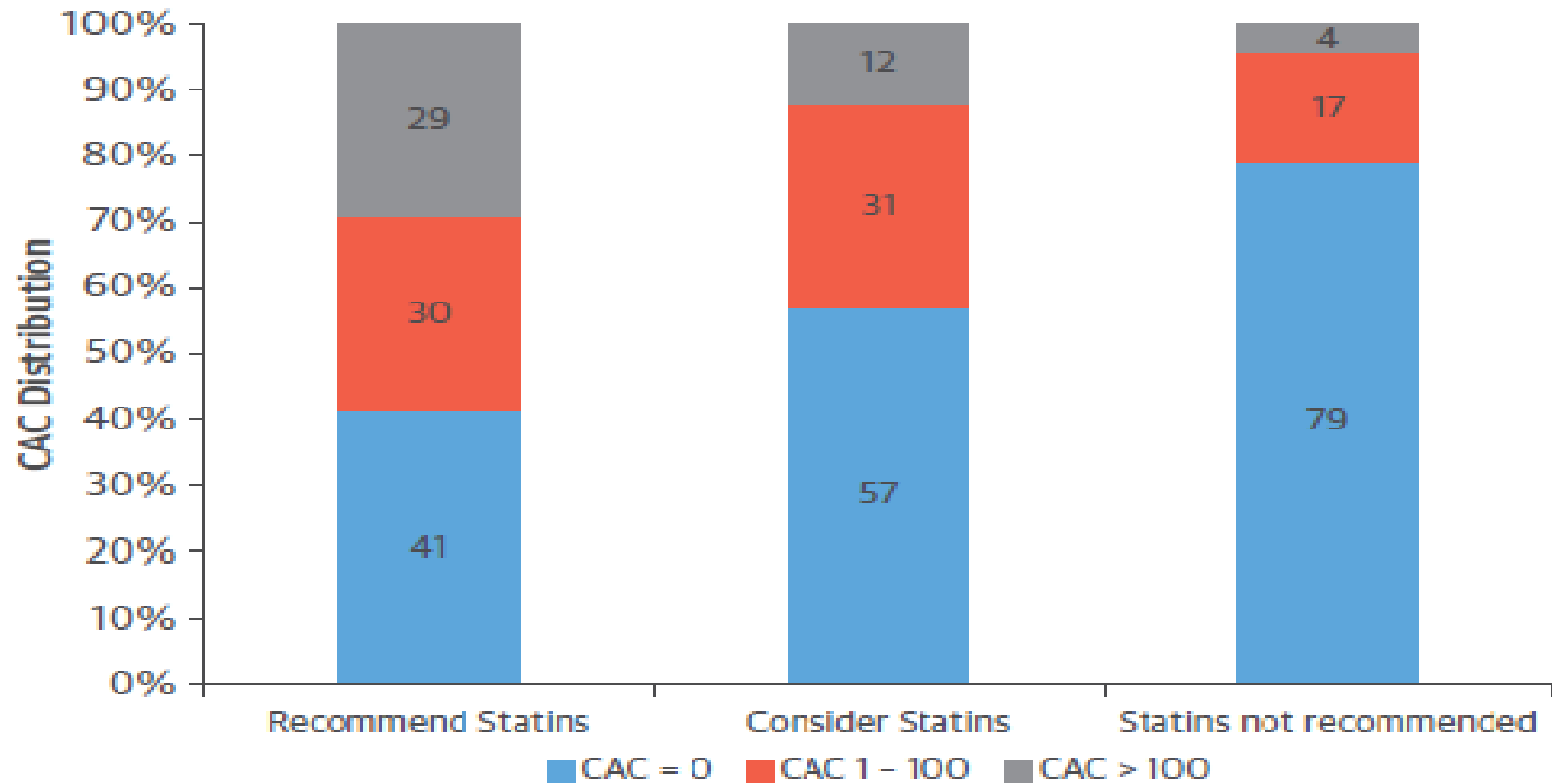


Variable	Hazard Ratio	Lower 95% CI	Upper 95% CI	P Values
Smoker (yes)	1.43	1.09	1.88	0.011
Diabetes mellitus (yes)	1.58	1.26	1.98	<0.001
Systolic blood pressure*	1.18	1.07	1.29	0.001
Total cholesterol*	1.11	1.01	1.22	0.029
HDL-cholesterol*	0.86	0.76	0.98	0.02
Positive CAC score	3.95	2.97	5.27	<0.001
Carotid IMT score (scaled 0–1)	3.15	2.05	4.85	<0.001



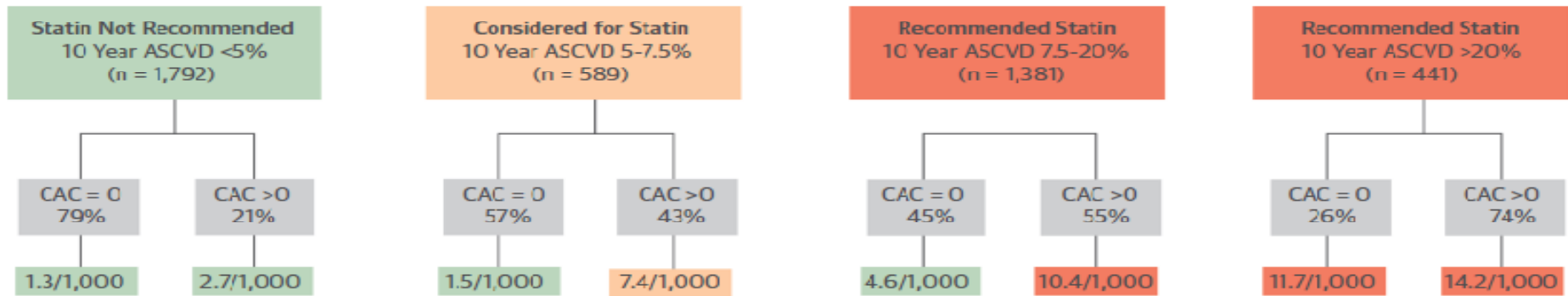
# **ESCORE DE CÁLCIO**

**FIGURE 2 CAC Distribution Across Statin Eligibility Groups**



CAC scores at baseline across statin-eligible groups according to the ACC/AHA Cholesterol Management Guidelines. The absence of CAC was noted in 44% (1,316 of 2,966) of statin candidates (considered or recommended). ACC/AHA = American College of Cardiology/ American Heart Association; CAC = coronary artery calcium.

**CENTRAL ILLUSTRATION** Impact of the Absence of CAC in Reclassifying Risk Below the Threshold for Statin Consideration Suggested by ACC/AHA Cholesterol Management Guidelines Across the Spectrum of Estimated 10-Year ASCVD Risk Score (Nondiabetic Patients With LDL-C of 70 to 189 mg/dl)



Nasir, K. et al. J Am Coll Cardiol. 2015; 66(15):1657-68.

The absence of CAC reclassifies risk below the threshold for statin consideration in 40% (956 of 2,411) of statin candidates (>5% ASCVD estimate), and in 49% (956 of 1,970) of those with ASCVD risk between 5% and 20%. ACC/AHA = American College of Cardiology/American Heart Association; ASCVD = atherosclerotic cardiovascular disease; CAC = coronary artery calcium; LDL-C = low-density lipoprotein cholesterol.

1. De acordo com as atuais orientações, 50% dos pacientes tem CAC=0.
2. O Escore de Cálcio pode ser útil na reclassificação do escore de risco na população entre 5-20%.

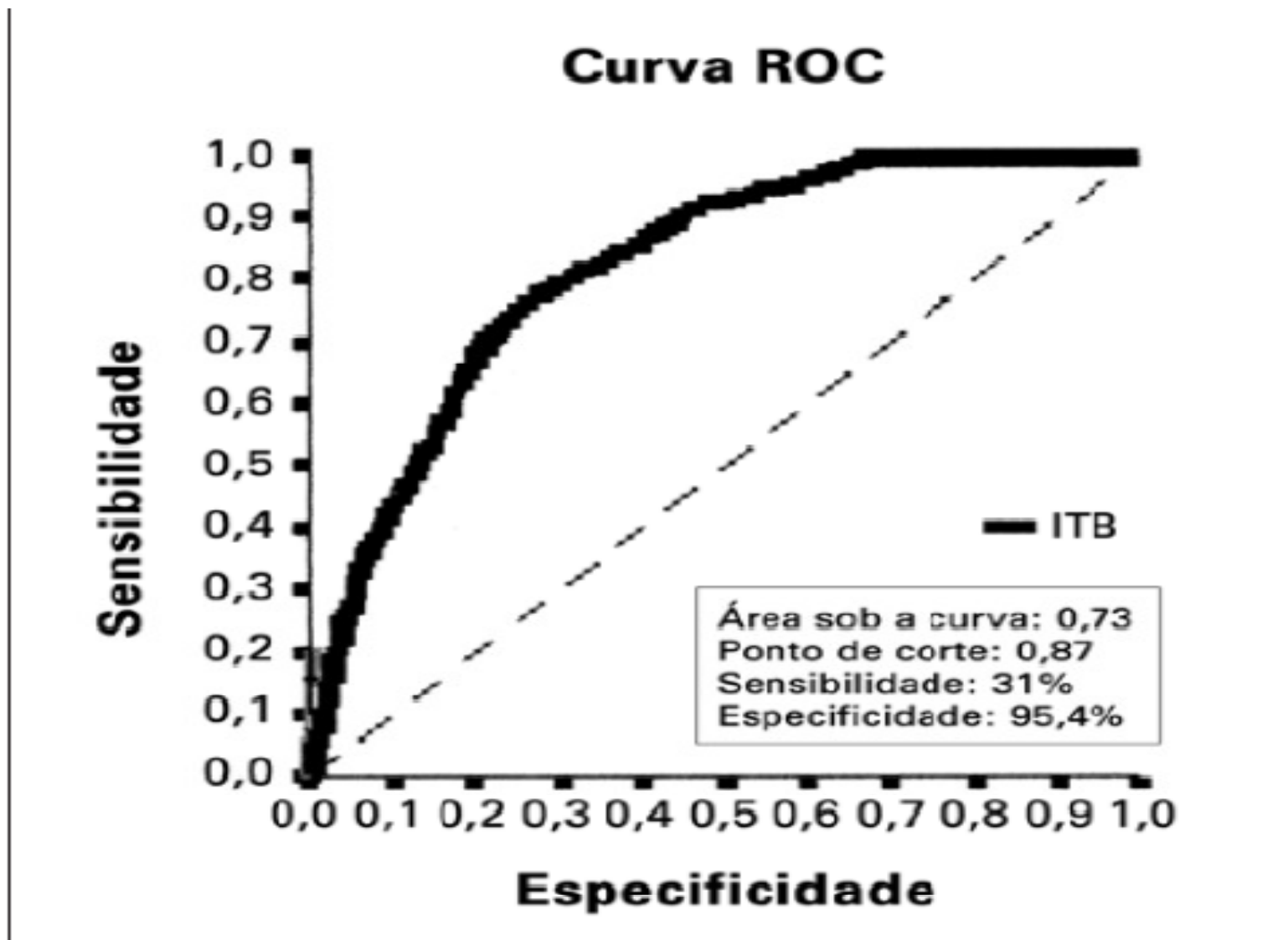


Figura. Curva ROC (*receiver operating curve*) do índice tornozelo-braquial (ITB), relacionada com a presença de estenose  $\geq 70\%$  em uma coronária ou ramo coronariano principal na angiografia coronária.

# **BIOMARCADORES**

# CRITÉRIOS PARA BIOMARCADORES

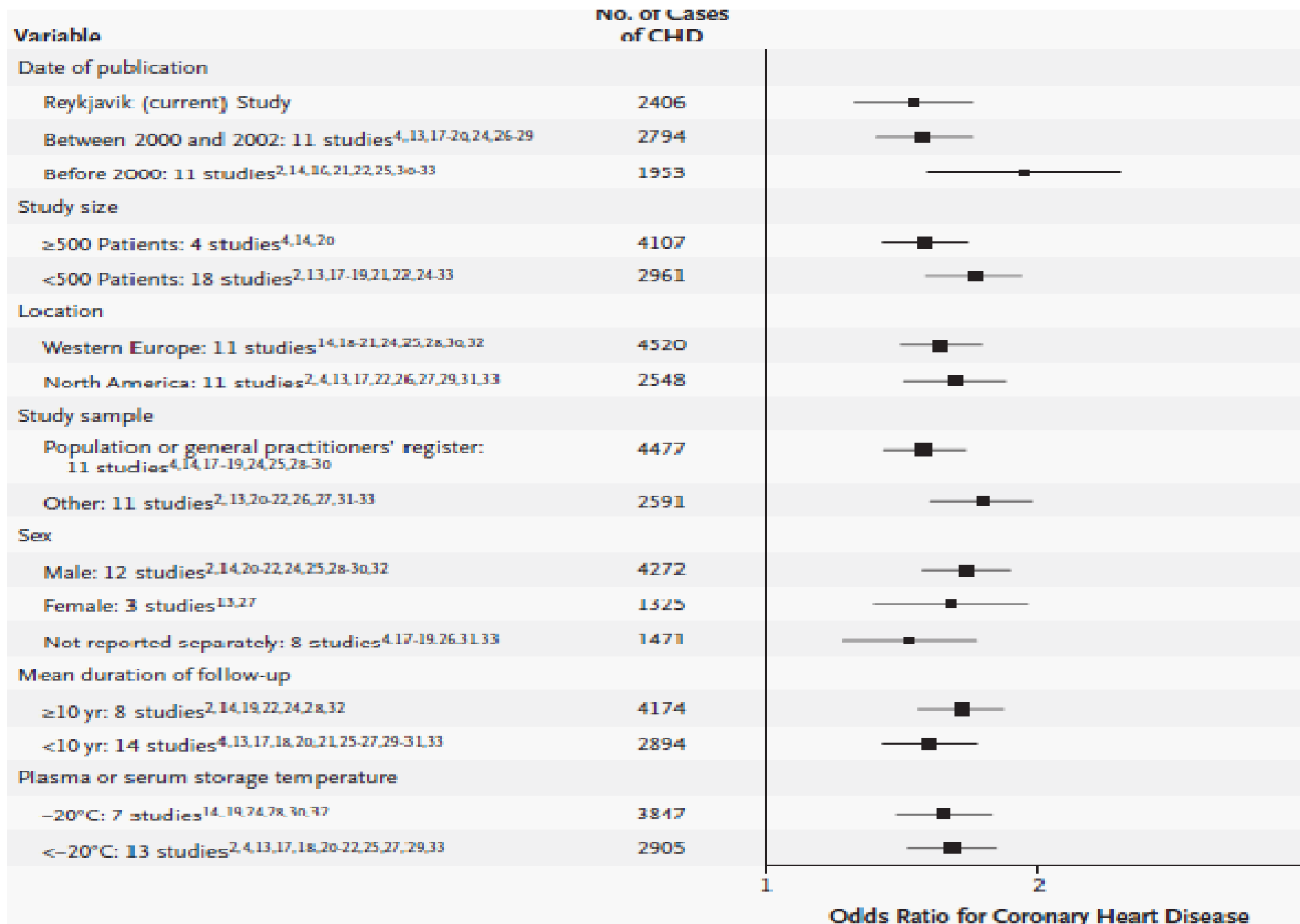
**Thomas J. Wang, MD**

Cardiology Division, Massachusetts General Hospital, Harvard Medical School,  
Boston, MA

Relativamente fácil de ser medido, capaz de adicionar nova informação além dos tradicionais fatores de risco e **ter potencial para mudar conduta do paciente ou reclassificar seu score de risco.**

Além disso deve ter uma relação de custo/efetividade satisfatória e uma reprodutibilidade de valores em diferentes coortes prospectivas.

- 1. Variação temporal.**
- 2. Valores de referência.**
- 3. Reprodutibilidade.**
- 4. Causalidade.**





**Table 3.** Mean levels of inflammatory and metabolic biomarkers in non-significant carotid vessel disease compared to significant carotid diseases (> 50%)

Biomarker	Non-significant CAS N=445	Significant CAS N=77	P value
Glucose (mg/dl)	105 ± 44	125 ± 63	0.003
Hs-CRP (mg/L)	6.3 ± 13	9.4 ± 17	0.001
Cholesterol (mg/dl)	161 ± 36	156 ± 38	0.09
LDL (mg/dl)	91 ± 29	86 ± 28	0.19
HDL (mg/dl)	44 ± 13	42 ± 10	0.38
Non-HDL-C (mg/dl)	117 ± 34	114 ± 38	0.23
HbA1c (%)	6.2 ± 1.2	6.6 ± 1.5	0.06
Fibrinogen (mg/dl)	309 ± 73	340 ± 87	0.007
NLR (10 <sup>3</sup> /μl)	3.2 ± 2.6	3.5 ± 4.1	0.79

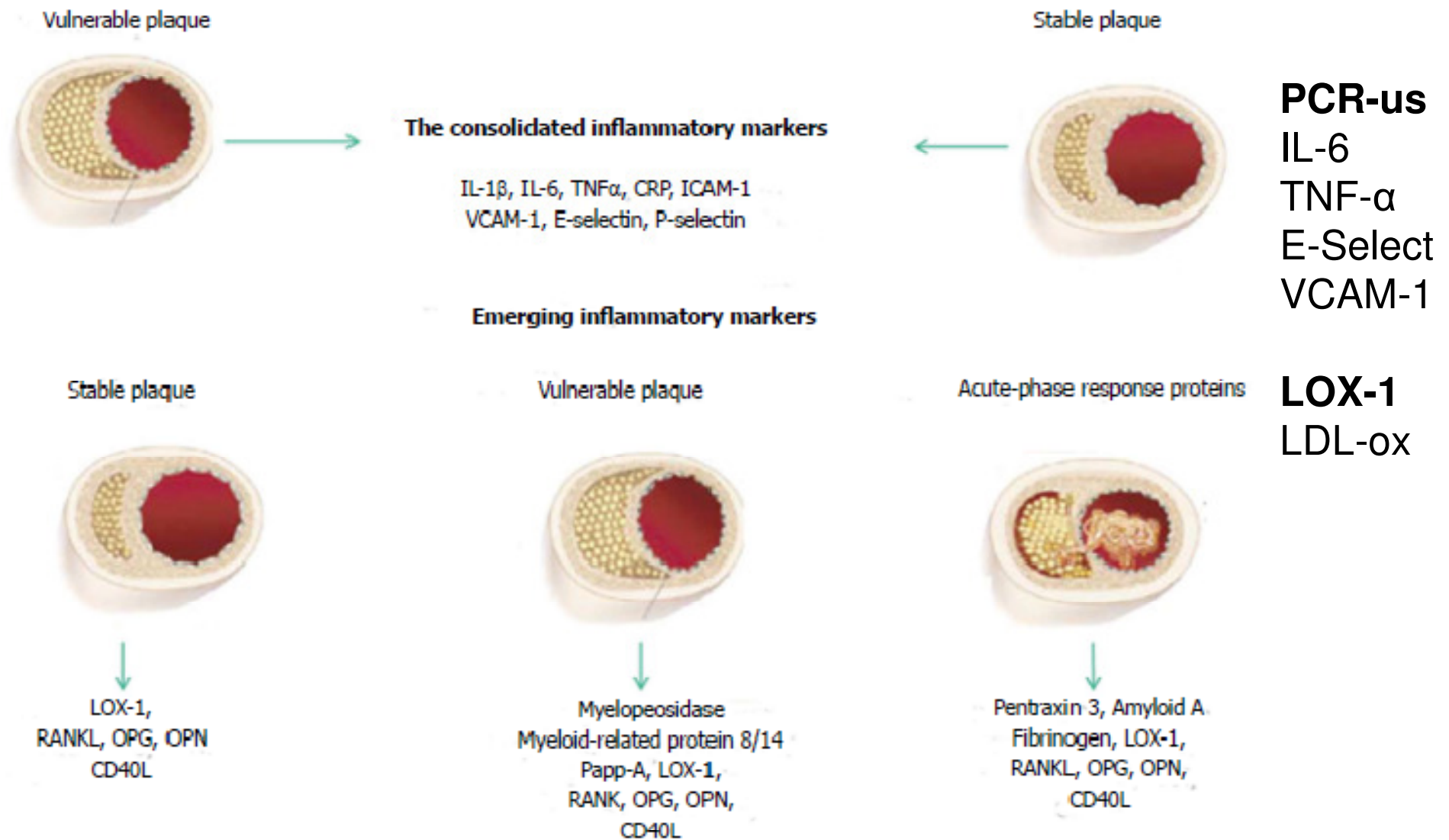
Hs-CRP – high sensitivity C-reactive protein, LDL – low density lipoprotein, HDL = high density lipoprotein, NLR = neutrophil/lymphocyte ratio

**Table 2.** Mean levels of inflammatory and metabolic biomarkers according to coronary artery disease severity

Biomarker	0 vessel CAD N=171	1 vessel CAD N=86	2 vessel CAD N=115	3 vessel CAD N=150	P value
Glucose (mg/dl)	99 ± 33	95 ± 33	116 ± 55	120 ± 59	< 0.001
Hs-CRP (mg/L)	4.5 ± 7.8	7 ± 16	7.9 ± 17	8.2 ± 16	0.18
Cholesterol (mg/dl)	166 ± 34	158 ± 36	161 ± 40	155 ± 36	0.005
Triglycerides (mg/dl)	134 ± 100	118 ± 58	139 ± 99	139 ± 83	0.27
LDL (mg/dl)	92 ± 26	90 ± 30	91 ± 32	86 ± 29	0.13
HDL (mg/dl)	47 ± 14	45 ± 13	43 ± 12	40 ± 9	< 0.001
Non-HDL-C (mg/dl)	118 ± 32	113 ± 34	119 ± 39	115 ± 34	0.38
HbA1c (%)	5.8 ± 0.8	6.0 ± 0.8	6.5 ± 1.2	6.7 ± 1.6	< 0.001
Fibrinogen (mg/dl)	296 ± 67	321 ± 81	318 ± 80	325 ± 76	0.002
NLR (10 <sup>3</sup> /μl)	3 ± 2.5	3 ± 1.96	3.3 ± 2.8	3.8 ± 3.6	0.09

P values between two groups: 0 vessel CAD vs. triple vessel CAD

Hs-CRP = high sensitivity C-reactive protein, LDL = low density lipoprotein, HDL = high density lipoprotein, NLR = neutrophil/lymphocyte ratio



**Figure 2 Consolidated and emerging inflammatory markers.** A new approach to establish the risk for coronary artery disease. Today new inflammatory markers are studied and classified according to their role in the development of coronary artery disease. TNF- $\alpha$ : Tumor necrosis factor alpha; IL: Interleukin; CRP: C-reactive protein; CAM: Adhesion molecules; OPG: Osteoprotegerin; OPN: Osteopontin. PAPP-A: Pregnancy-associated alpha plasma protein A; LOX-1: Lectin-like oxidized low-density lipoprotein receptor-1.

*Atherosclerosis*. 2016 February ; 245: 230–236. doi:10.1016/j.atherosclerosis.2015.11.034.

## **Common Genetic Variants and Subclinical Atherosclerosis: The Multi-Ethnic Study of Atherosclerosis (MESA)**

Jose D. Vargas<sup>1,8</sup>, Ani Manichaikul<sup>2,3</sup>, Xin-Qun Wang<sup>2</sup>, Stephen S. Rich<sup>3</sup>, Jerome I. Rotter<sup>4</sup>, Wendy S. Post, MD<sup>5</sup>, Joseph F. Polak<sup>6</sup>, Matthew J. Budoff<sup>7</sup>, and David A. Bluemke<sup>8,\*</sup>

*Circ Cardiovasc Genet*. 2015 June ; 8(3): 507–515. doi:10.1161/CIRCGENETICS.114.000740.

## **Association of a 62 Variant Type 2 Diabetes Genetic Risk Score with Markers of Subclinical Atherosclerosis: A Transethnic, Multicenter Study**

## **Risk Scores of Common Genetic Variants for Lipid Levels Influence Atherosclerosis and Incident Coronary Heart Disease**

Aaron Isaacs,\* Sara M. Willems,\* Daniel Bos, Abbas Dehghan, Albert Hofman, M. Arfan Ikram, André G. Uitterlinden, Ben A. Oostra, Oscar H. Franco, Jacqueline C. Witteman, Cornelia M. van Duijn