



REVASCULARISATION DU PATIENT DIABETIQUE EN 2021. QUOI DE NEUF?

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APPAC 2021

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LE PATIENT CORONARIEN DIABÉTIQUE EST ...

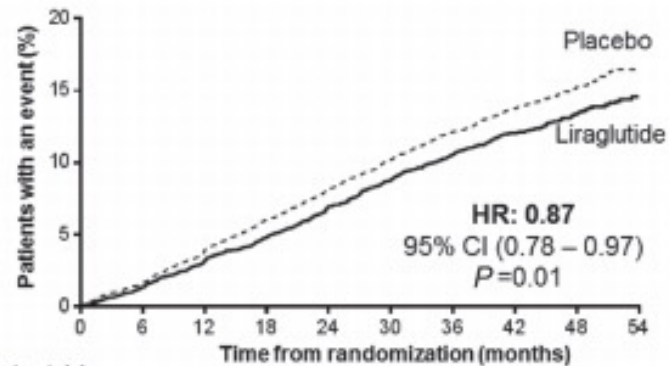
- **FRÉQUENT**: >30% DE NOS INTERVENTIONS
- **SILENCIEUX** (PEU DE SYMPTÔMES OU ATYPIQUES: SCA OU IDM PASSENT INAPERÇUS)
- **PLURIFACTORIEL** (SVT PLSRS F DE R ASSOCIÉS: HTA, DYSLIP, TABAC , SURPOIDS...)
- **EVOLUTIF** : INSULINO REQUÉRANCE

LES LÉSIONS MODÉRÉES ÉVOLUENT TOUJOURS

- **IMPRÉVISIBLE** : EVENEMENTS AIGUS MALGRÉ TRT (SCA, IDM, AVC)
- **GRAVE ET DIFFICILE A TRAITER** : PC, LÉSIONS DIFFUSES, DISTALES

PRINCIPAUX PROGRÈS: - TRT MEDICAL DIABÈTE

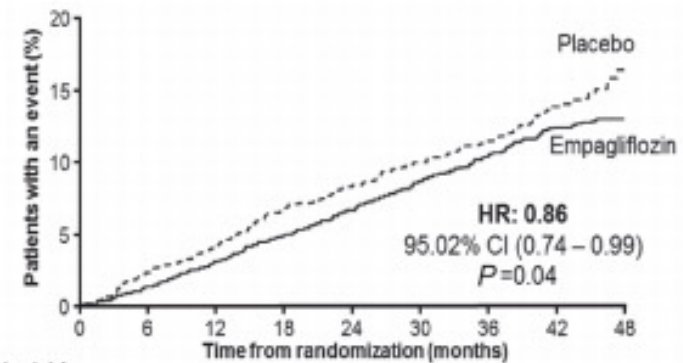
- CARDIO DIABETOLOGIE
- IMAGERIE



Patients at risk

Liraglutide	4668	4593	4496	4400	4280	4172	4072	3982	1562	424
Placebo	4672	4588	4473	4352	4237	4123	4010	3914	1543	407

Figure 2. Cardiovascular event rate in the LEADER trial. The rate of the primary outcome (cardiovascular death, nonfatal myocardial infarction, or nonfatal stroke) was significantly lower in the Liraglutide group.



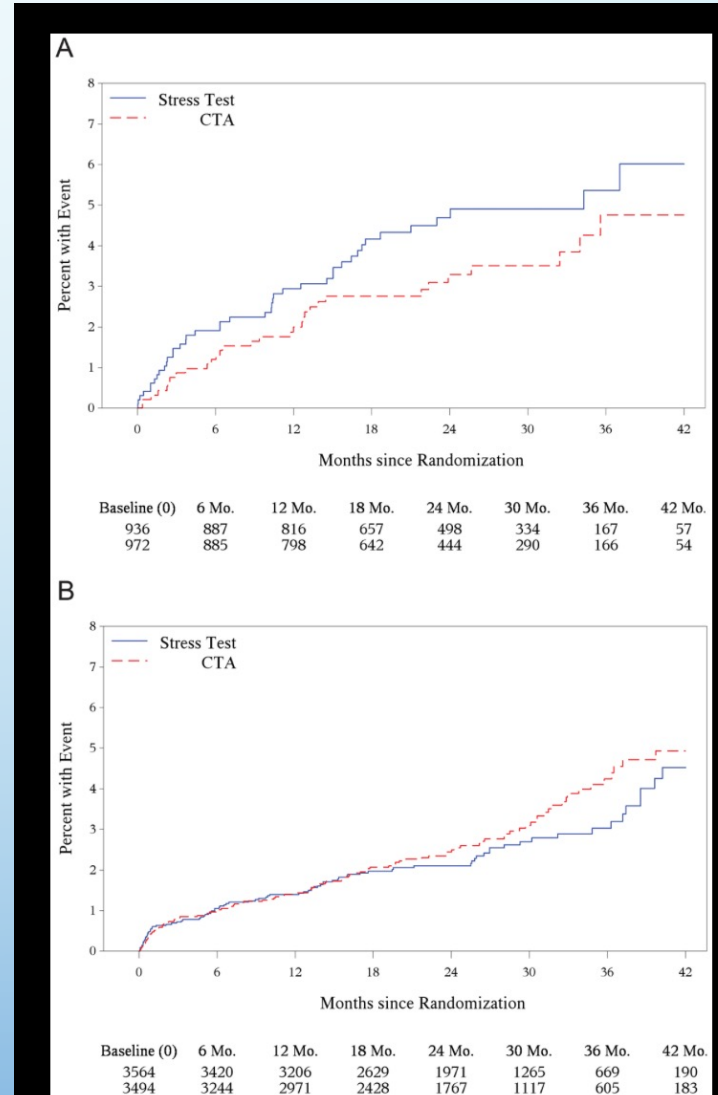
Patients at risk

Empagliflozin	4687	4580	4455	4328	3851	2821	2359	1534	370
Placebo	2333	2256	2194	2112	1875	1380	1161	741	166

Figure 3. Cardiovascular event rate in the EMPA-REG OUTCOME trial. The rate of the primary outcome (cardiovascular death, nonfatal myocardial infarction, or nonfatal stroke) was significantly lower in the Empagliflozin group.

DEPISTAGE PAR CORO SCANNER VS TEST ISCHEMIQUE: ETUDE PROMISE (JACC 2019)

1900 patients D. et 7000 ND randomisés
Coroscanner vs echo de stress:
Dépistage par coroscan améliore le Pc sur
DC, infarctus chez D.



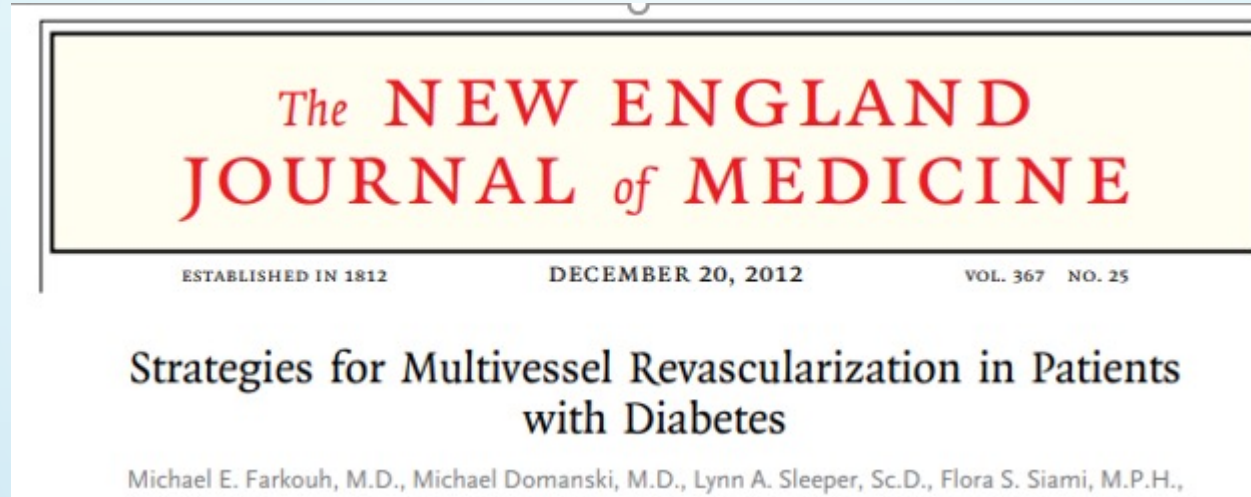
RECOS ESC 2018 REVASCULARISATION

Recommendations	Class ^a	Level ^b
Assessment of surgical risk^c		
It is recommended that the STS score is calculated to assess in-hospital or 30 day mortality, and in-hospital morbidity after CABG. ^{112,114,138}	I	B
Calculation of the EuroSCORE II score may be considered to assess in-hospital mortality after CABG. ¹¹²	IIb	B
Assessment of CAD complexity		
In patients with LM or multivessel disease, it is recommended that the SYNTAX score is calculated to assess the anatomical complexity of CAD and the long-term risk of mortality and morbidity after PCI. ¹¹⁷⁻¹²⁴	I	B
When considering the decision between CABG and PCI, completeness of revascularization should be prioritized. ^{131,132,134-136}	IIa	B

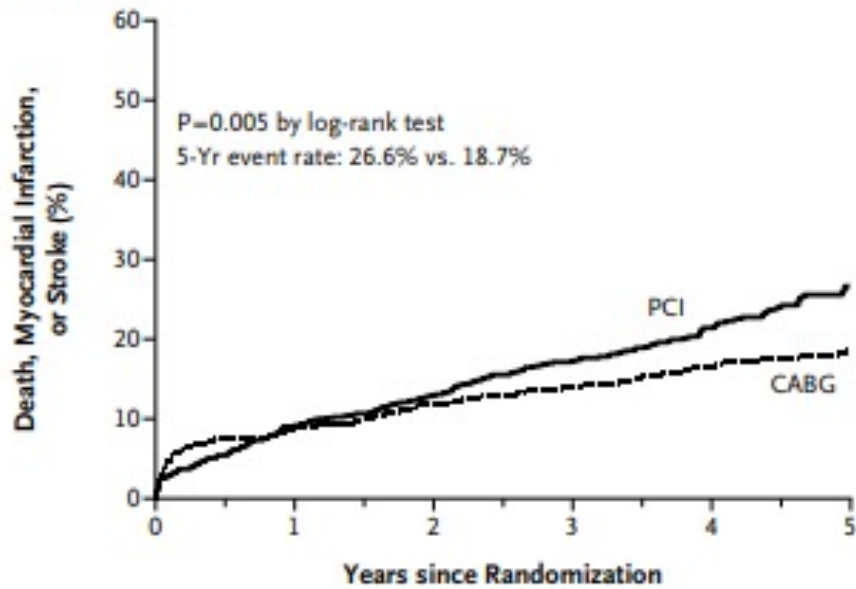
Three-vessel CAD without diabetes mellitus	CABG		PCI	
	Class	Level	Class	Level
Three-vessel disease with low SYNTAX score (0 - 22). ^{102,105,121,123,124,135,149}	I	A	I	A
Three-vessel disease with intermediate or high SYNTAX score (>22). ^{e 102,105,121,123,124,135,149}	I	A	III	A
Three-vessel CAD with diabetes mellitus				
Three-vessel disease with low SYNTAX score 0-22. ^{102,105,121,123,124,135,150-157}	I	A	IIb*	A
Three-vessel disease with intermediate or high SYNTAX score (>22). ^{e 102,105,121,123,124,135,150-157}	I	A	III	A

*: IIa en 2014

FREEDOM: 1900 PTS D. PLURITRONC, XCIENCE VS CABG



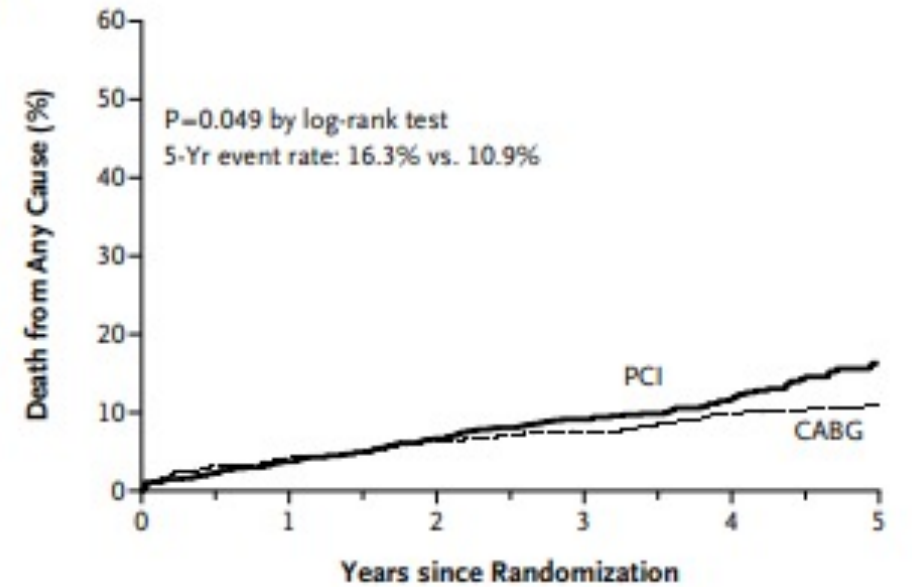
A Primary Outcome



No. at Risk

PCI	953	848	788	625	416	219
CABG	947	814	758	613	422	221

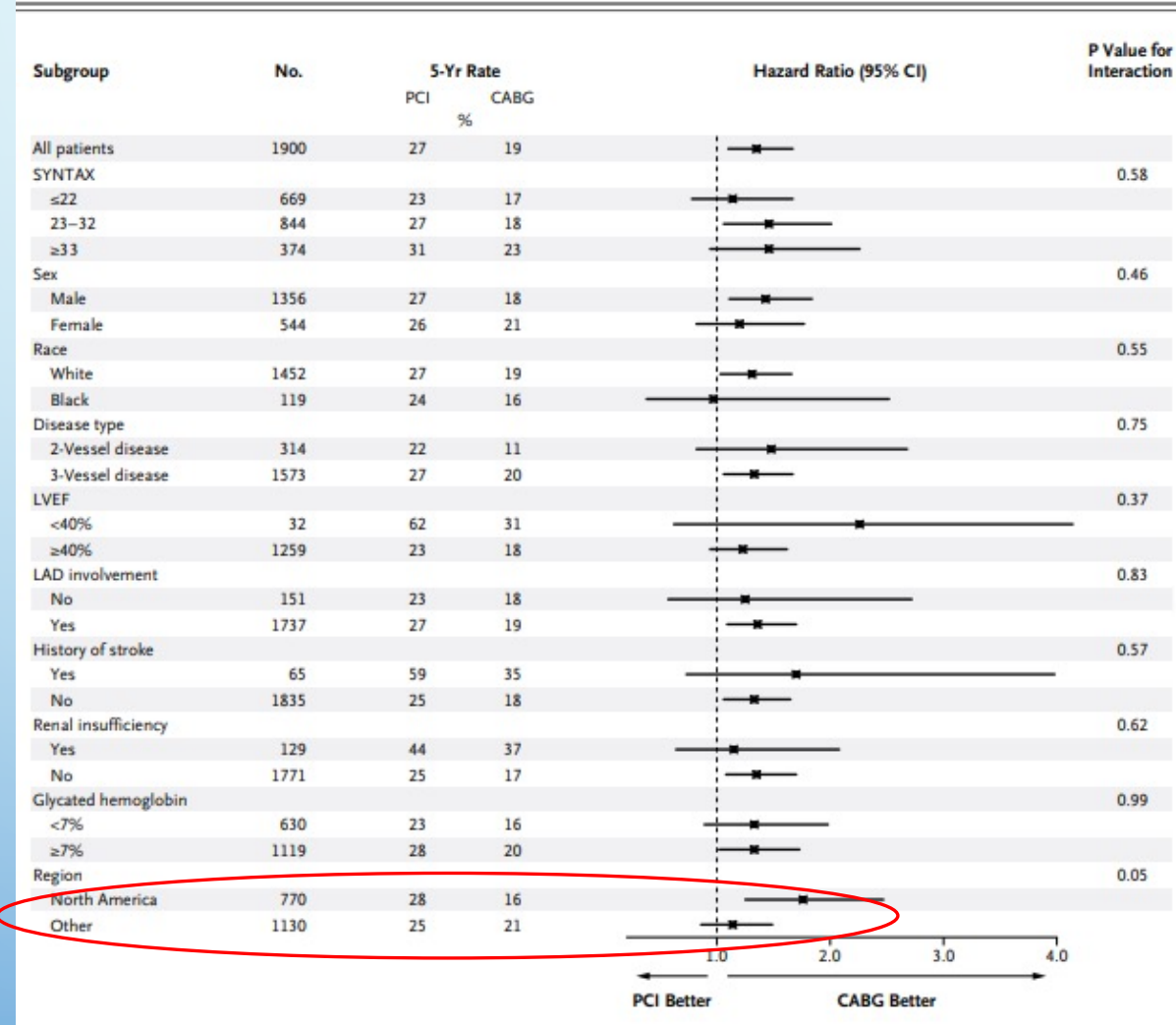
B Death



No. at Risk

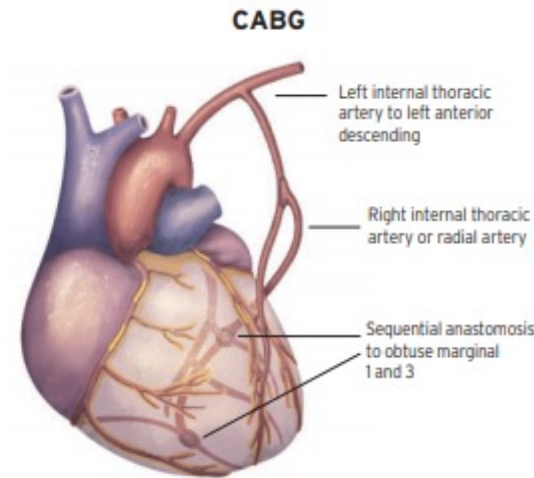
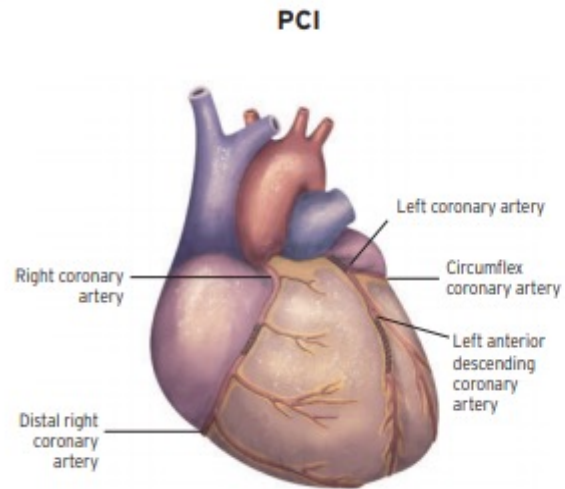
PCI	953	897	845	685	466	243
CABG	947	855	806	655	449	238

ON PEUT SE RASSURER, ON N'EST PAS NORD AMÉRICAINS... 🤔



CHOIX STENT/ PONTAGE

PCI	CABG
<p style="text-align: center;">FAVOURS PCI</p> <p>Clinical characteristics</p> <ul style="list-style-type: none"> Presence of severe co-morbidity (not adequately reflected by scores) Advanced age/frailty/reduced life expectancy Restricted mobility and conditions that affect the rehabilitation process <p>Anatomical and technical aspects</p> <ul style="list-style-type: none"> MVD with SYNTAX score 0-22 Anatomy likely resulting in incomplete revascularization with CABG due to poor quality or missing conduits Severe chest deformation or scoliosis Sequelae of chest radiation Porcelain aorta* 	<p style="text-align: center;">FAVOURS CABG</p> <p>Clinical characteristics</p> <ul style="list-style-type: none"> Diabetes Reduced LV function (EF \leq35%) Contraindication to DAPT Recurrent diffuse in-stent restenosis <p>Anatomical and technical aspects</p> <ul style="list-style-type: none"> MVD with SYNTAX score \geq23 Anatomy likely resulting in incomplete revascularization with PCI Severely calcified coronary artery lesions limiting lesion expansion <p>Need for concomitant interventions</p> <ul style="list-style-type: none"> Ascending aortic pathology with indication for surgery Concomitant cardiac surgery

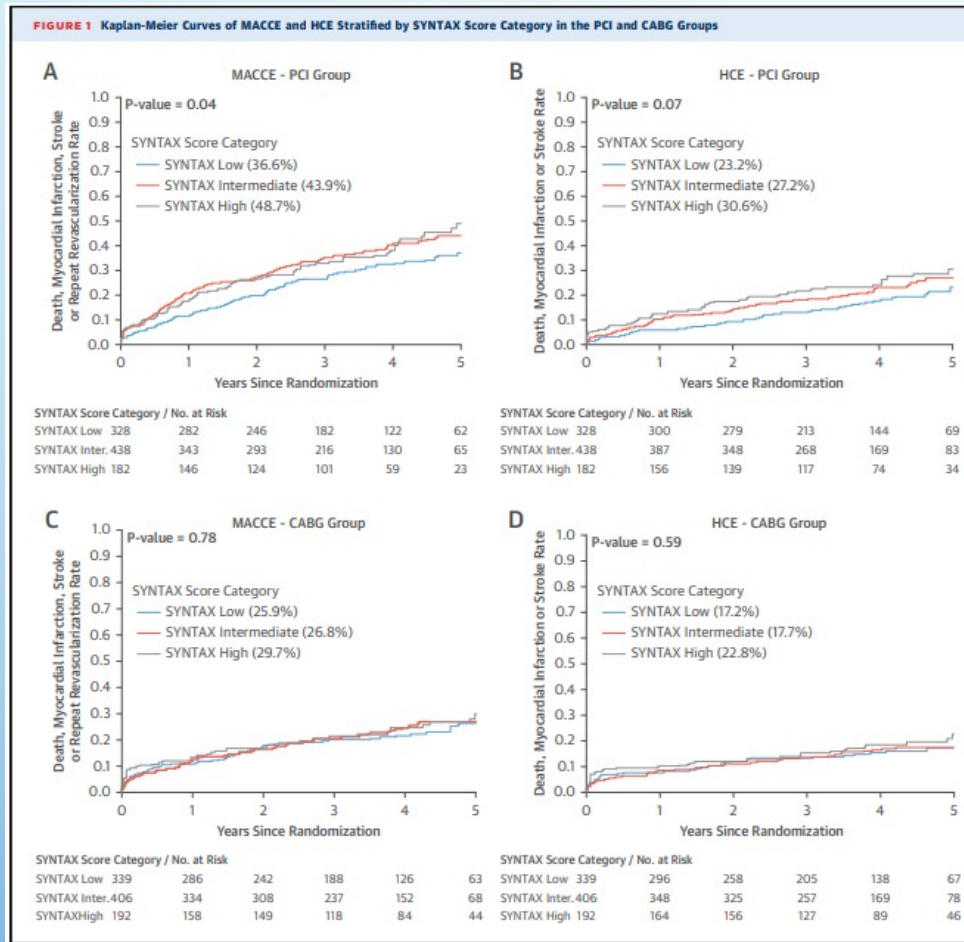


SYNTAX SCORE PERTINENT POUR LE CHOIX DE REVASCULARISATION CHEZ LE DIABETIQUE?

APPLICATION DU SYNTAX SCORE À L'ÉTUDE FREEDOM (XCIENCE VS CABG IN 1900 D. PTS (JACC 2018))

MACCE: Major Adverse Cardiac and Cerebral Events (Death, MI, Stroke, repeat revascularisation)

HCE: Hard Cardio cerebral Events (Death, MI, Stroke)



Kaplan-Meier curve for (A) major adverse cardiac and cerebrovascular events (MACCE) and (B) hard cardiovascular events (HCE) stratified by SYNTAX score in the percutaneous coronary intervention (PCI) group. Kaplan-Meier curve for (C) MACCE and (D) HCE stratified by SYNTAX score in the coronary artery bypass grafting (CABG) group. MI = myocardial infarction.

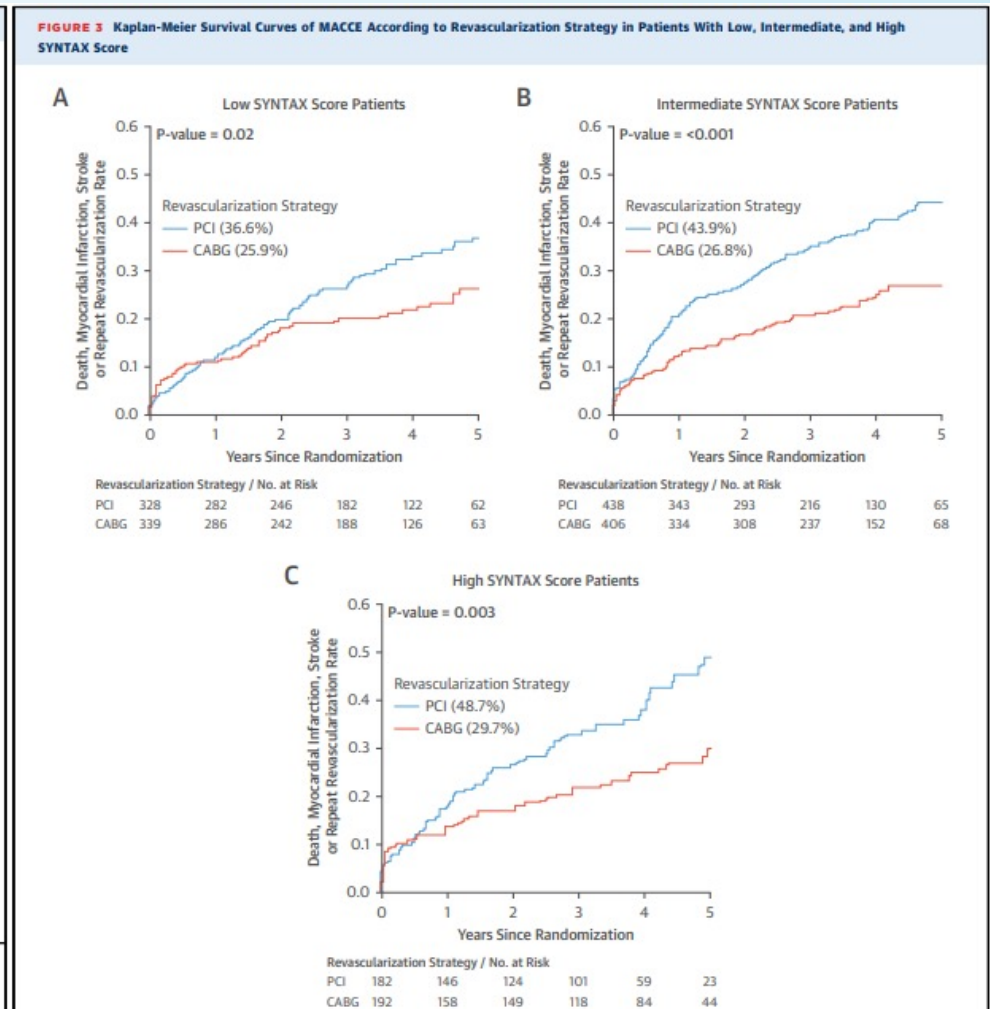
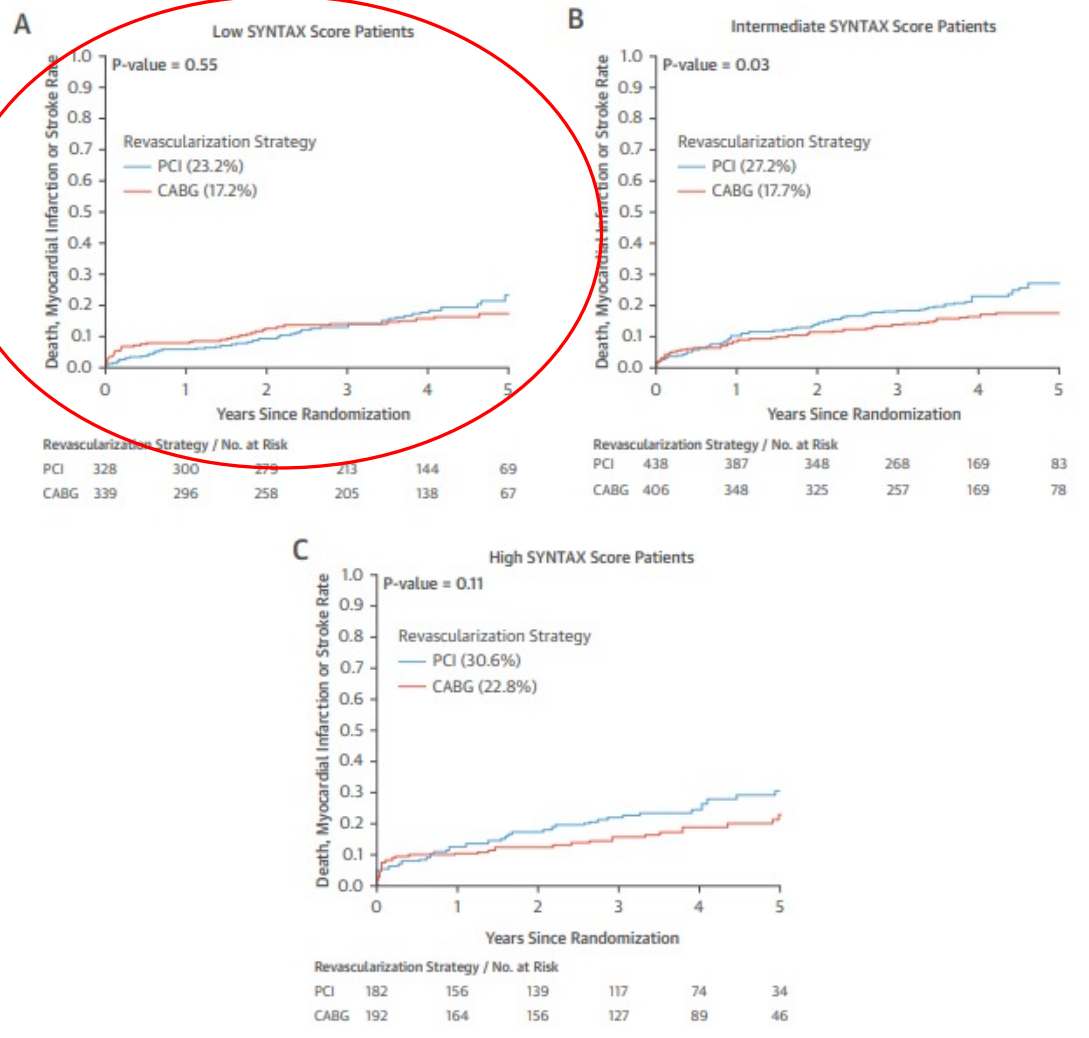


FIGURE 4 Kaplan-Meier Survival Curves of HCE According to Revascularization Strategy in Patients With Low, Intermediate, and High SYNTAX Score



Kaplan-Meier survival curves for HCE stratified by revascularization strategy in patients with (A) low, (B) intermediate, and (C) high SYNTAX score. Abbreviations as in Figure 1.

Pluritronc D. avec Syntax bas: on peut choisir PCI:
 Taux de HCE = CABG
 Mais risque de revascularisation augmenté.

SYNTAX SCORE PERTINENT POUR LES ÉVÈNEMENTS GRAVES
 PCI VS CABG, ET POUR PCI, PAS POUR CABG

Real-world outcomes of different treatment strategies in patients with diabetes and three-vessel coronary disease: a mean follow-up 6.3 years study from China

Xueyan Zhao, Lianjun Xu, Lin Jiang, Jian Tian, Yin Zhang, Dong Wang, Kai Sun, Bo Xu, Wei Zhao, Rutai Hui, Runlin Gao, Lei Song* and Jinqing Yuan*

MONDE RÉEL: PATIENTS PLURITRONC: OMT VS PCI VS CABG (3000 PTS, 2021)

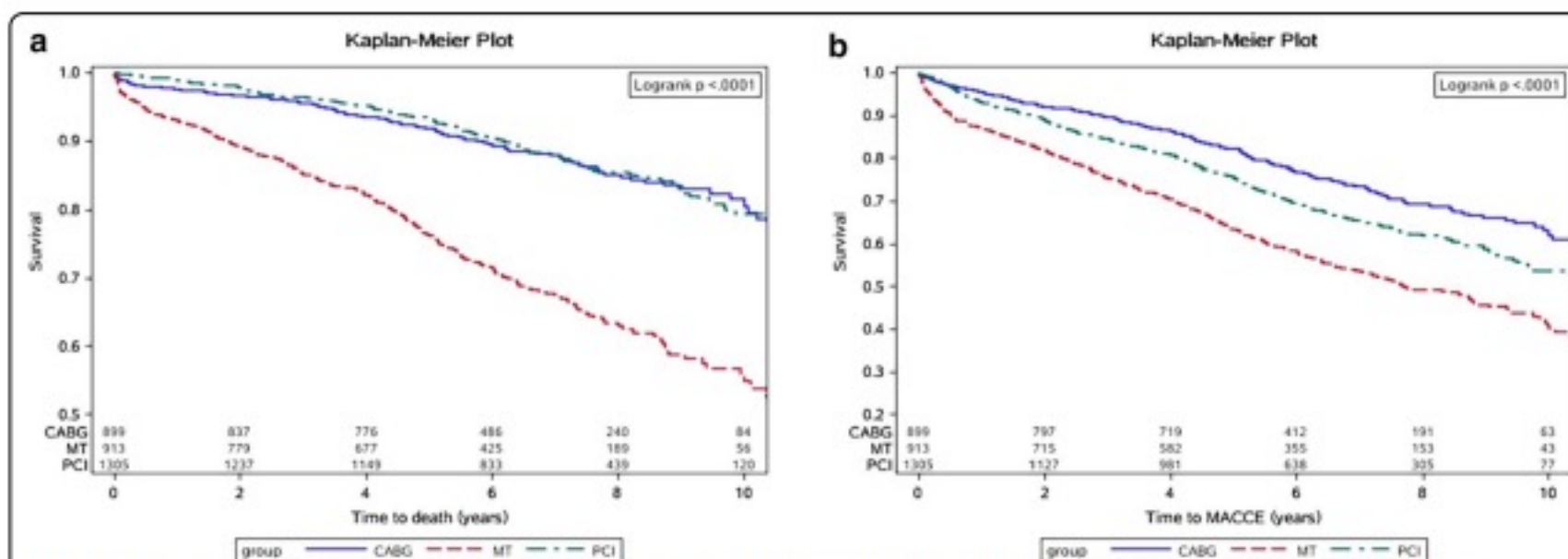


Fig. 2 Kaplan–Meier survival curve analysis of death (a) (log-rank p < 0.0001) and MACCE (b) (log-rank p < 0.0001) according to different strategies including PCI, CABG and MT treatment. PCI/ percutaneous coronary intervention, CABG/ coronary artery bypass grafting, MT/ medical treatment, MACCE/ major adverse cardiac and cerebrovascular events

DC pas de ≠ , + d'IDM groupe PCI, plus d'AVC groupe CABG

DÉCÈS: PAS DE P<0.05

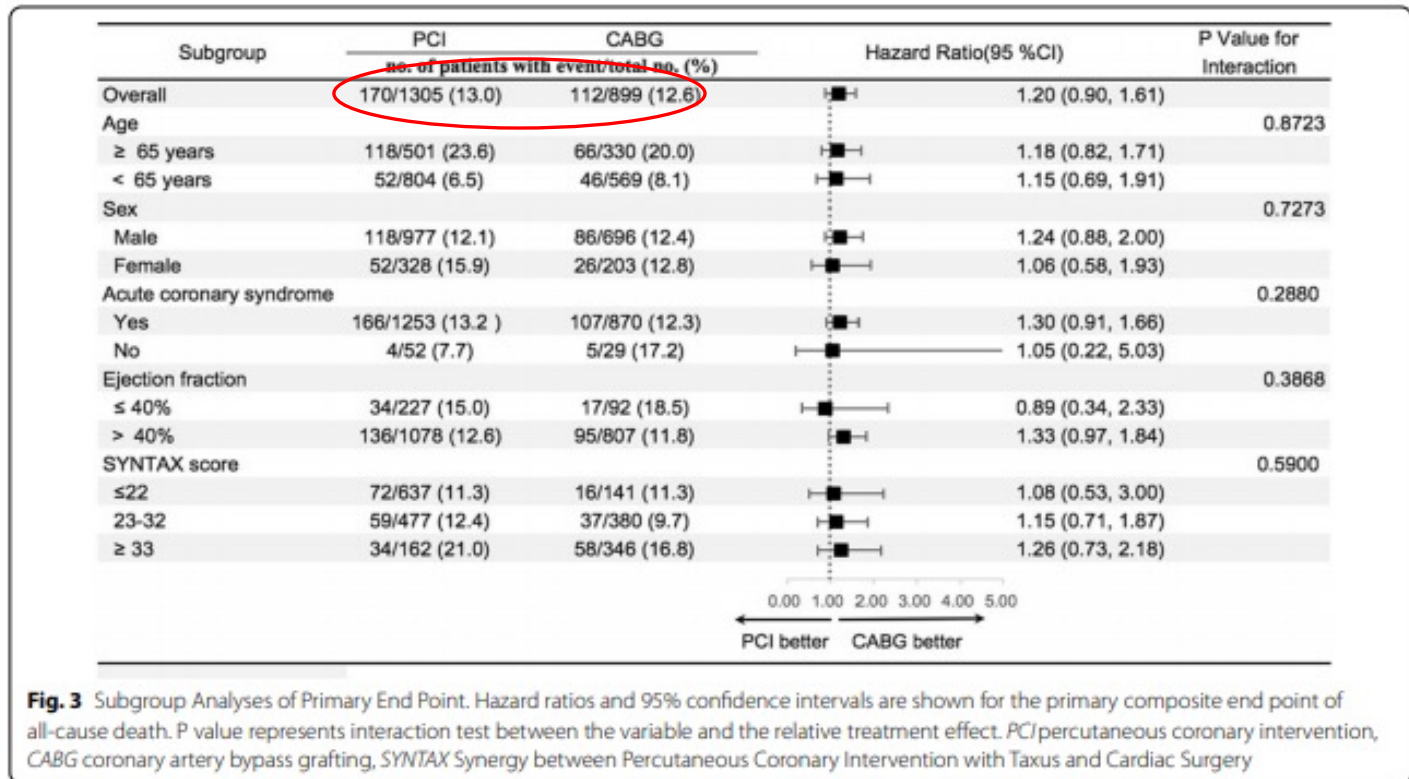


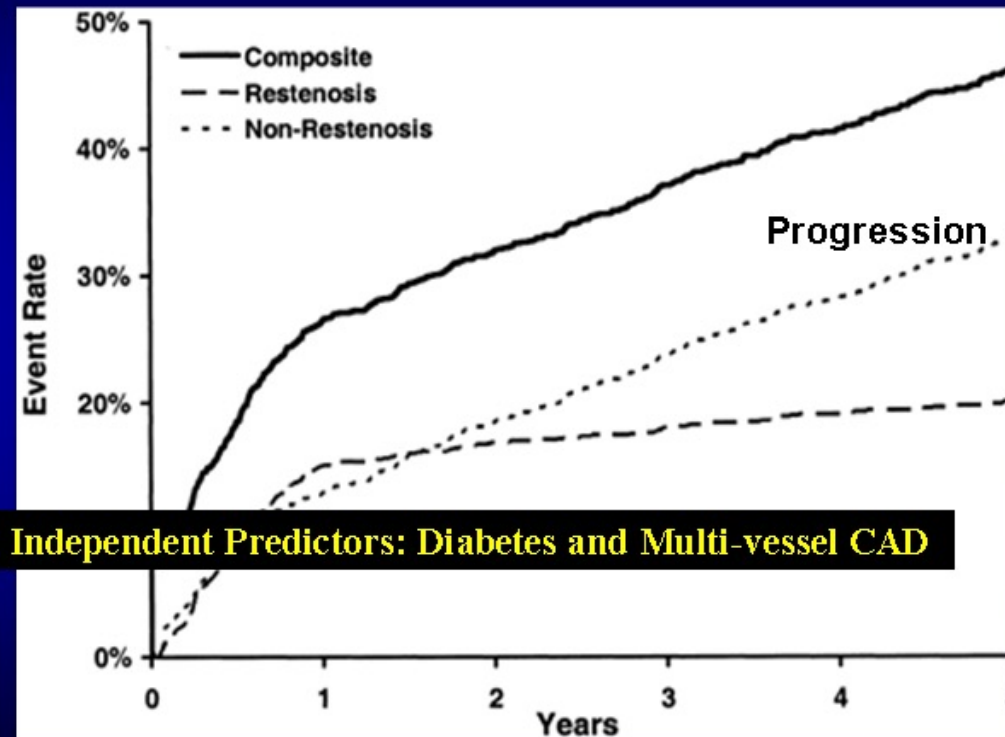
Fig. 3 Subgroup Analyses of Primary End Point. Hazard ratios and 95% confidence intervals are shown for the primary composite end point of all-cause death. P value represents interaction test between the variable and the relative treatment effect. *PCI* percutaneous coronary intervention, *CABG* coronary artery bypass grafting, *SYNTAX* Synergy between Percutaneous Coronary Intervention with Taxus and Cardiac Surgery

Dans le monde réel, pas de perte de chance pour le patient diabétique stenté

STENT: TRT FOCAL D'UNE LESION A L'INSTANT T

Le multistenting ne peut pas prévenir l'évolutivité et les évènements ischémiques ultérieurs sur les lésions non traitées.

Long-Term Outcomes After Stenting: Restenosis Vs. Progression of CAD




Independent Predictors: Diabetes and Multi-vessel CAD

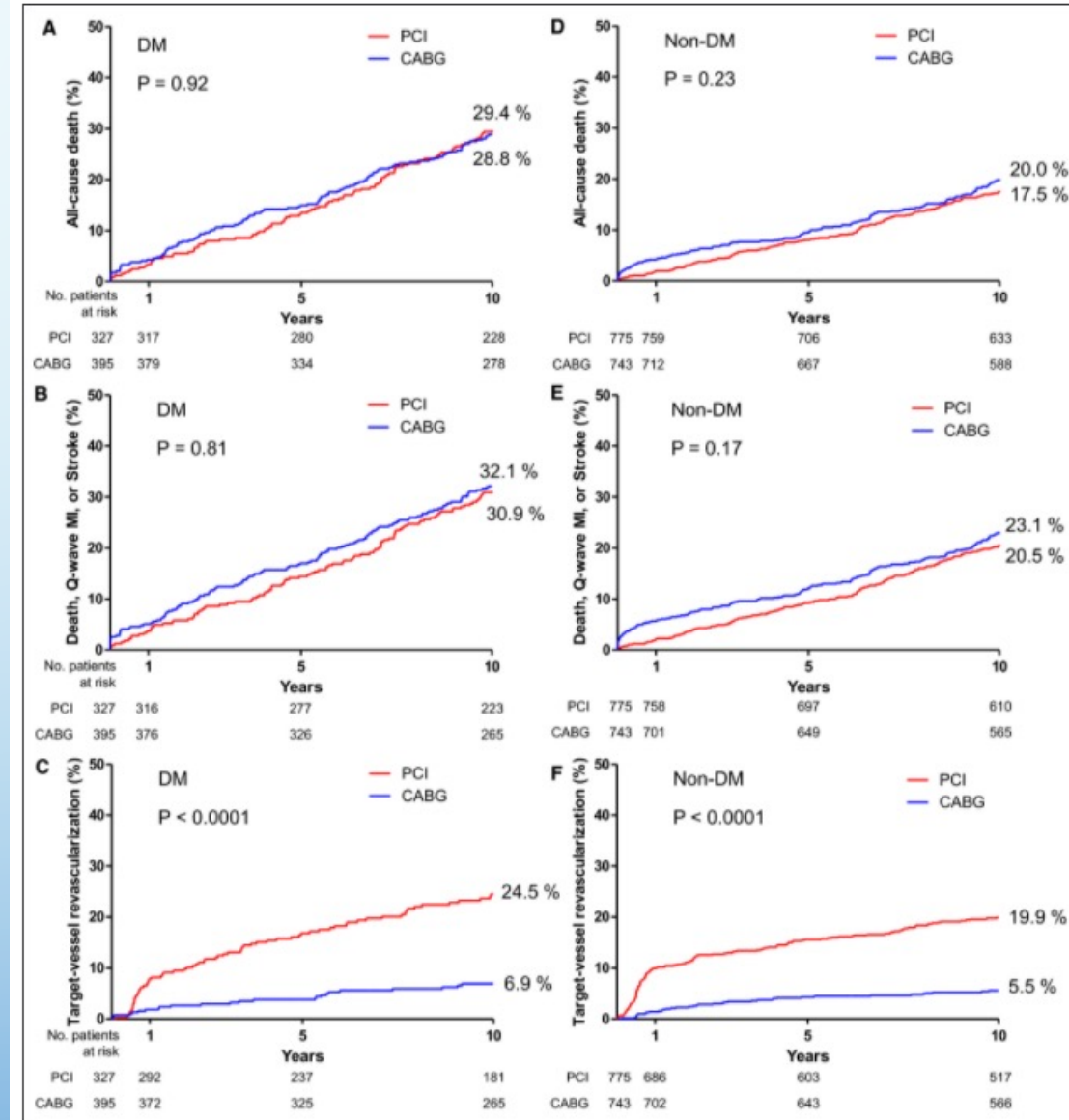
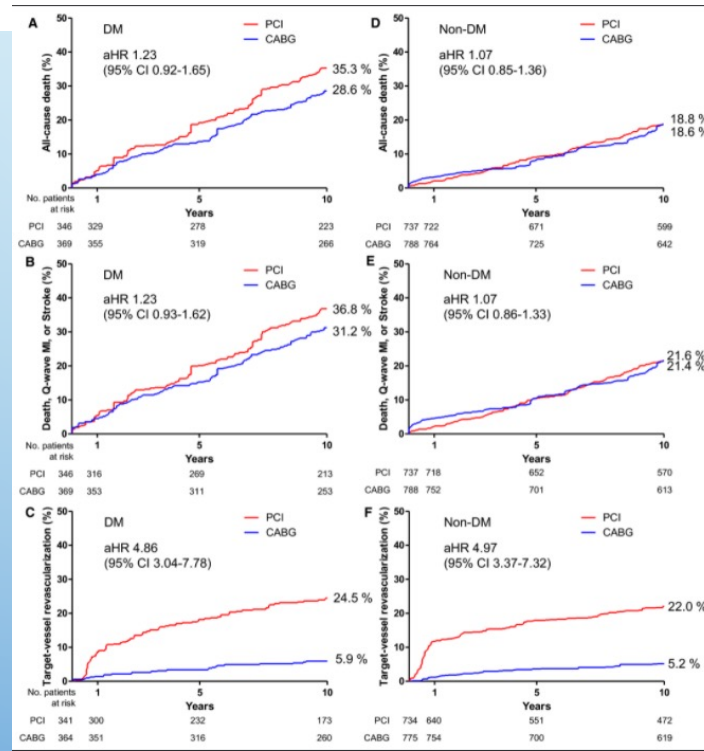
TCG ET DIABETE: MAIN COMPARE 10 ANS

Pas de \neq à 10 ans sur les « hard events », ni sur les décès

Long-Term (10-Year) Outcomes of Stenting or Bypass Surgery for Left Main Coronary Artery Disease in Patients With and Without Diabetes Mellitus JACC 2019

Kyusup Lee, MD; Jung-Min Ahn, MD; Yong-Hoon Yoon, MD; Do-Yoon Kang, MD; Seo-Young Park, PhD; Euihong Ko, MD; Hanbit Park, MD; Sang-Cheol Cho, MD; Sangwoo Park, MD; Tae Oh Kim, MD; Pil Hyung Lee, MD; Seung-Whan Lee, MD, PhD; Seong-Wook Park, MD, PhD; Duk-Woo Park, MD, PhD ; Seung-Jung Park, MD, PhD

SUIVI PATIENTS D. AVEC STENTS NUS



CTO

Long-term outcomes of medical therapy versus successful recanalisation for coronary chronic total occlusions in patients with and without type 2 diabetes mellitus

Lei Guo^{1†}, Junjie Wang¹, Huaiyu Ding¹, Shaoke Meng¹, Xiaoyan Zhang², Haichen Lv¹, Lei Zhong¹, Jian Wu¹, Jiaying Xu¹, Xuchen Zhou¹ and Rongchong Huang^{1,3†}

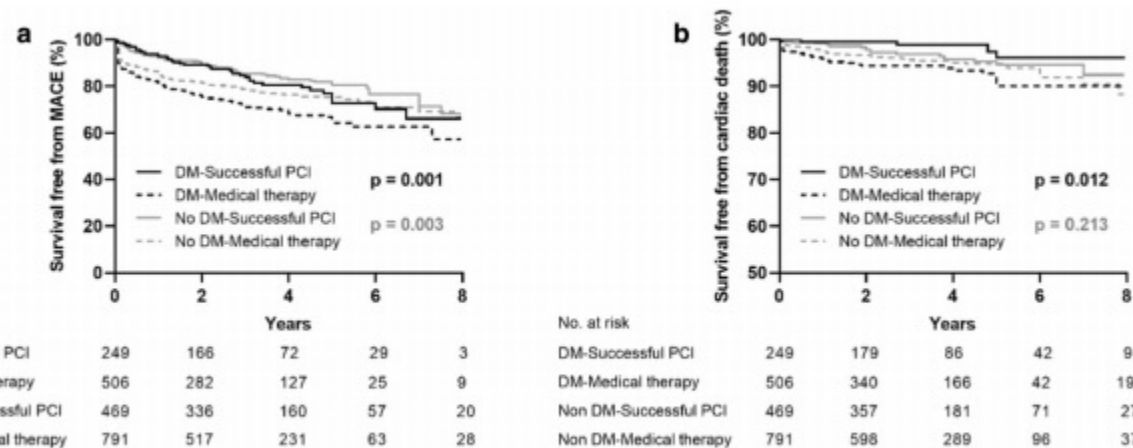


Fig. 2 Kaplan–Meier curves for MACE (a) and cardiac death (b) during follow-up for successful CTO-PCI versus medical therapy in total patients with and without diabetes. CTO chronic total occlusion, DM diabetes mellitus, MACE major adverse cardiovascular events, PCI percutaneous coronary intervention

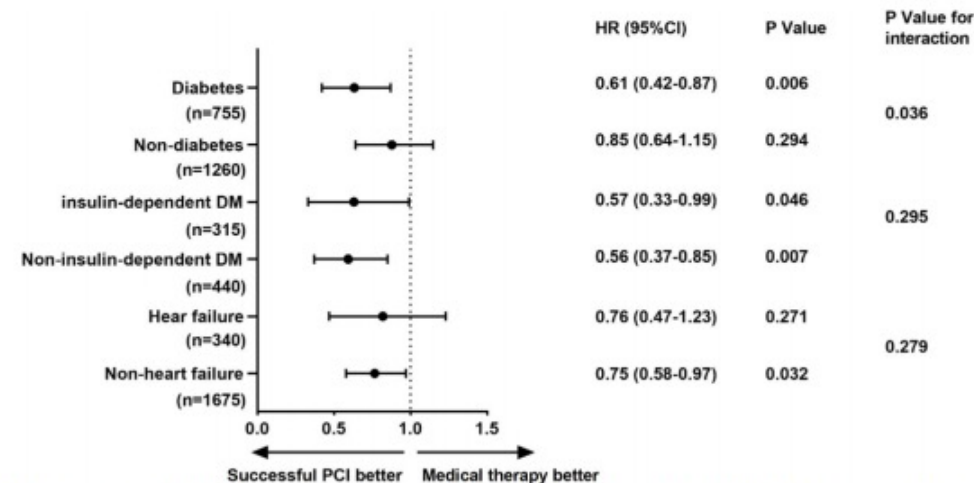


Fig. 5 DM, insulin-dependent DM and heart failure subgroup analysis for MACE. CI confidence interval(s), DM diabetes mellitus, HR hazard ratio, MACE major adverse cardiovascular events, PCI percutaneous coronary intervention

QUE VALENT NOS OUTILS D'ÉVALUATION DE LA REVASCULARISATION CHEZ LE DIABÉTIQUE? FFR

- FFR controversée chez le diabétique: microcirculation

JAMA Cardiology | **Original Investigation**

Usefulness of Routine Fractional Flow Reserve for Clinical Management of Coronary Artery Disease in Patients With Diabetes

Eric Van Belle, MD, PhD; Alessandro Cosenza, MD; Sergio Bravo Baptista, MD, PhD; Flavien Vincent, MD;

JAMA Cardiol. 2020;5(3):272-281

Key Points

Question What are the usefulness, rate of major adverse cardiovascular events (MACE), and clinical outcomes of routinely integrating fractional flow reserve in the management strategy for patients with diabetes who undergo coronary angiography?

Findings In this cross-sectional study of 1983 patients, overall reclassification by fractional flow rate was high and similar in patients with diabetes (41.2%) and patients without diabetes (37.5%); however, reclassification from medical treatment to revascularization was more frequent among patients with diabetes. The rate of 1-year MACE was similar in reclassified (9.7%) and nonreclassified (12.0%) patients with diabetes, and the rate of MACE of patients deferred based on fractional flow reserve was similar among those with and without diabetes.

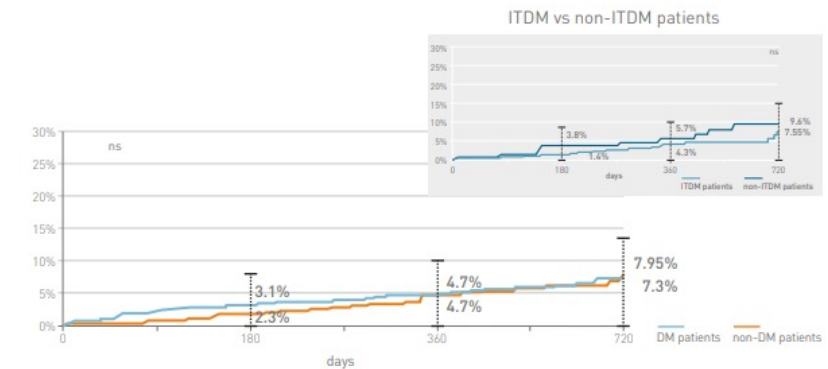
Meaning The findings suggest that management strategies guided by fractional flow reserve, including revascularization deferral, may be useful for patients with diabetes.

Y A T IL UN STENT ACTIF DEDIE AUX PATIENTS DIABETIQUES?

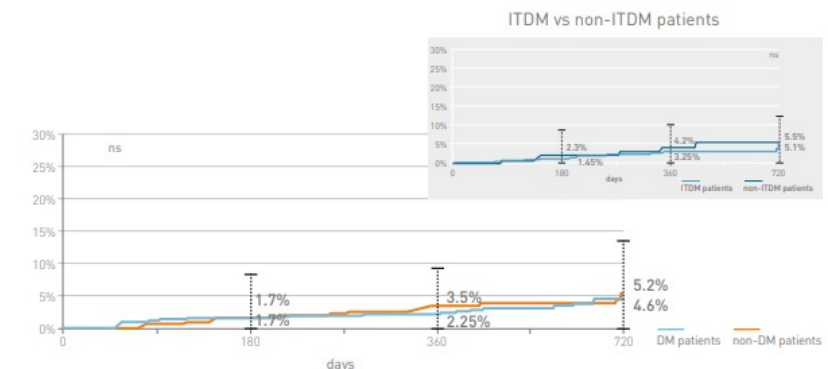
- STENT CRE8® ALVI MEDICA: STENT SANS POLYMÈRE AVEC RÉSERVOIRS, ACTION ANTIPROLIFÉRATIVE PAR MIX SIROLIMUS-AMPHILIMUS ET COATING PASSIF AU CARBONE. MEILLEURE PENETRATION ENDOTHELIALE CHEZ LE PATIENT DIABETIQUE.
- RESULTATS ENCOURAGEANTS CHEZ LE PATIENT DIABETIQUE Y COMPRIS ID
- REGISTRE « REAL WORLD » ASTUTE 1116 PTS (A. COLOMBO)
- RESULTATS COMPARABLES EN TVF ET TLR: D VS ND ET DID VS DNID
- EN ATTENTE RANDOMISÉE: CHALLENGE, 4000 PTS
- CRE8 VS XCIENCE : ÉTUDE DE SUPERIORITE

ASTUTE Registry

TLF AT 1 YEAR AND 2 YEARS



TLR AT 1 YEAR AND 2 YEARS



CONCLUSIONS

- DEPUIS 30 ANS, AUCUNE ETUDE NE MONTRE UNE EQUIVALENCE GLOBALE A 5 ANS ENTRE PONTAGE ET STENT CHEZ LE PATIENT DIABETIQUE PLURITRONCULAIRE : LA CHIRURGIE PROTEGE MIEUX DES EVENEMENTS ISCHEMIQUES ULTERIEURS ET DOIT ÊTRE PRIVILEGIÉE CHEZ LES PATIENTS PLURITRONCS DE COMPLEXITÉ MOYENNE A SEVERE.
- LES STENTS ACTIFS DE DERNIÈRE GENERATION ONT PERMIS DE PROGRESSER/STENTS NUS ET 1ERE GÉNÉRATION. CRE8 ?
- DES RAISONS D'ESPÉRER AVEC LES STENTS CHEZ:
 - LES SCORES SYNTAX BAS <22
 - LES ATTEINTES DU TRONC SANS ATTEINTE PLURITRONC
 - LES CTO

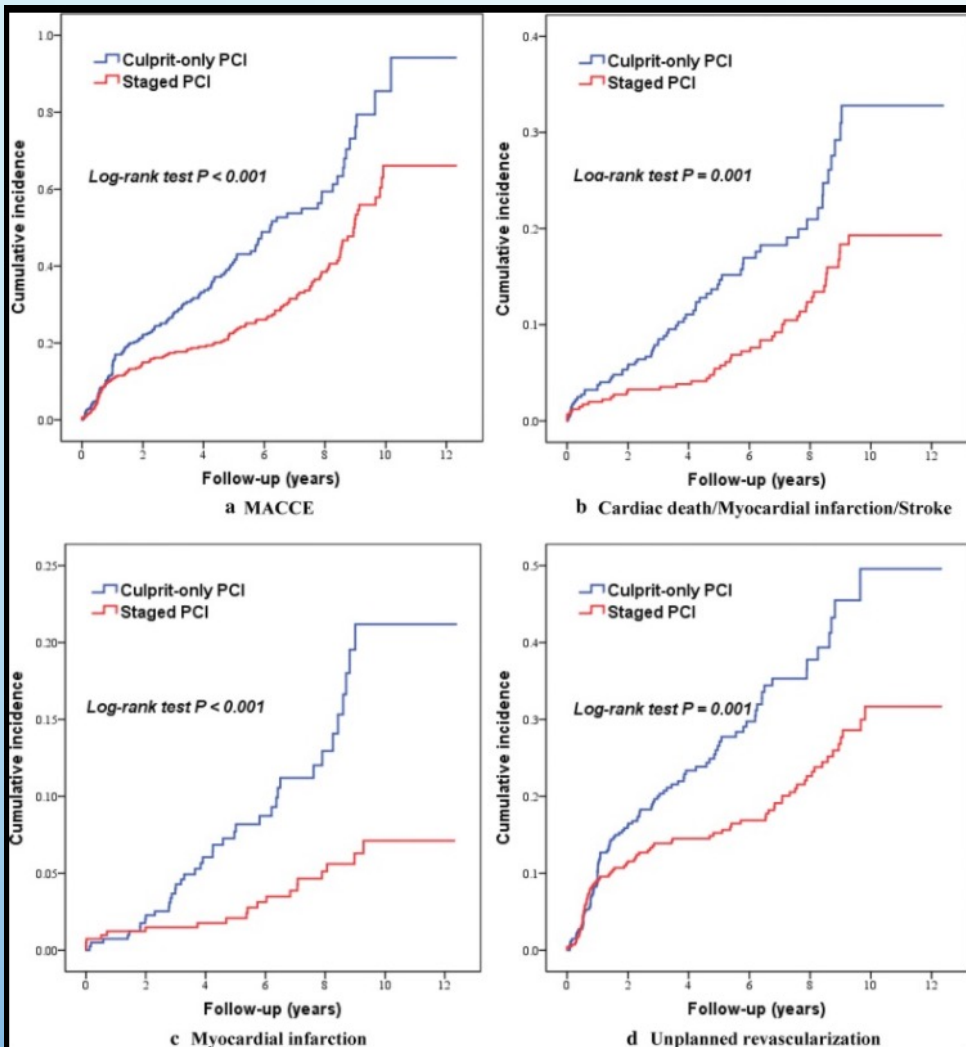
CONCLUSIONS (2)

- LES DONNEES DE VRAIE VIE SONT PLUS ENCOURAGEANTES QUE LES ÉTUDES RANDOMISEES: PAS D'EXCÈS DE DÉCÈS A 10 ANS, SUPERIORITE DE LA REVASCULARISATION (Y COMPRIS STENT) SUR LE TRT MEDICAL
- LA REVASCULARISATION DU DIABETIQUE SURTOUT PAR STENTING DOIT S'ACCOMPAGNER D'UNE PRISE EN CHARGE GLOBALE CARDIO-DIABETOLOGIQUE AVEC OPTIMISATION DU TRT MEDICAL.

ST+ PLURITRONC: ND VS D

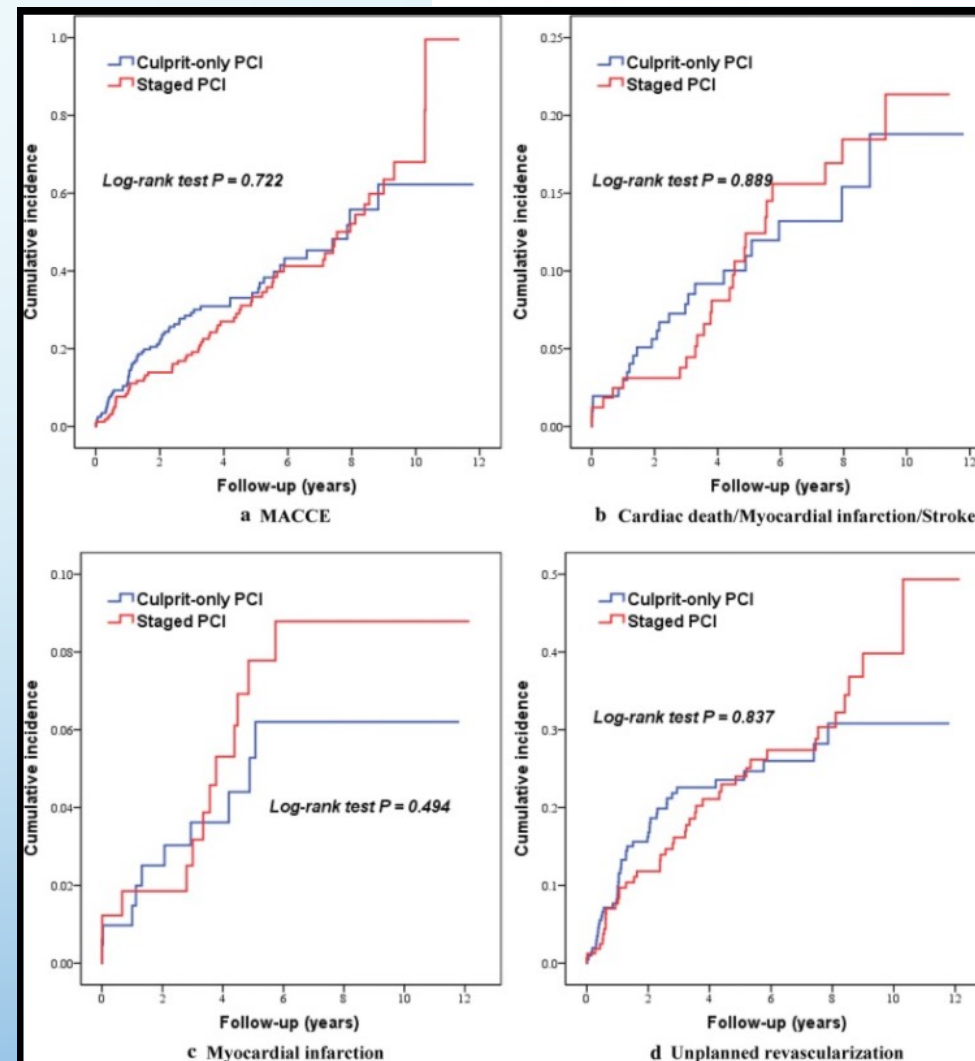
Staged complete revascularization or culprit-only percutaneous coronary intervention for multivessel coronary artery disease in patients with ST-segment elevation myocardial infarction and diabetes

Kongyong Cui¹, Shuzheng Lyu², Hong Liu¹, Xiantao Song¹, Fei Yuan¹, Feng Xu¹, Min Zhang¹, Wei Wang¹, Mingduo Zhang¹, Dongfeng Zhang¹, Jinfan Tian¹



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Fig. 2 Kaplan–Meier curves of clinical outcomes in nondiabetic patients. MACCE major adverse cardiac and cerebrovascular event, PCI percutaneous coronary intervention



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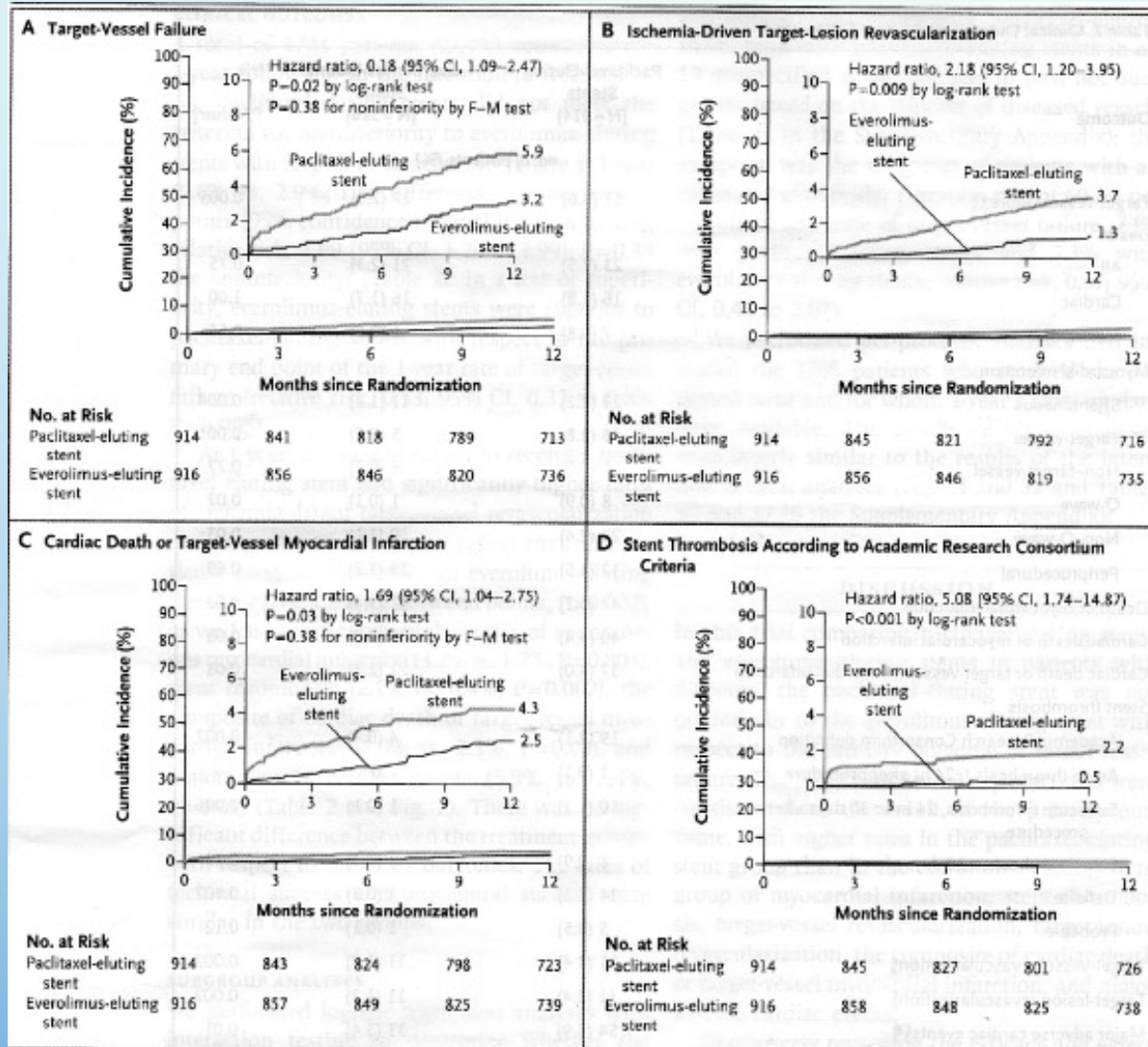
Fig. 3 Kaplan–Meier curves of clinical outcomes in diabetic patients. MACCE major adverse cardiac and cerebrovascular event, PCI percutaneous coronary intervention

SYNTAX SCORE ET RISQUE D'IDM, AVC

Table 4 Effect of SYNTAX score grouping on MI and stroke outcomes of different treatment strategies

	MT group (N = 913)		PCI group (N = 1305)		CABG group (N = 899)	
	HR (95% CI)	P value	HR (95% CI)	P value	HR (95% CI)	P value
MI						
SYNTAX scores \leq 22	0.77 (0.41, 1.48)	0.4372	1.00 (ref)	–	0.11 (0.01, 0.78)	0.0278
SYNTAX scores 22–32	0.57 (0.26, 1.24)	0.1589	1.00 (ref)	–	0.15 (0.05, 0.44)	0.0005
SYNTAX scores \geq 33	0.56 (0.22, 1.40)	0.2142	1.00 (ref)	–	0.23 (0.08, 0.65)	0.0057
Stroke						
SYNTAX scores \leq 22	0.91 (0.51, 1.65)	0.7610	1.00 (ref)	–	1.02 (0.51, 2.07)	0.9463
SYNTAX scores 22–32	0.77 (0.36, 1.63)	0.4908	1.00 (ref)	–	1.87 (1.10, 3.18)	0.0214
SYNTAX scores \geq 33	1.88 (0.73, 4.84)	0.1888	1.00 (ref)	–	2.39 (1.02, 5.60)	0.0447

DES CHEZ LES DIABÉTIQUES (TUXEDO,KAUL, NEJM 29 OCT 2015)



1830 pts coronariens
 Diabétiques:
 - 914 PES
 - 916 EES

A 1 an IDM=
 3.2% PES 1.2% EES p 0.004



RESTENOSE : MIEUX AVEC LES DES MAIS – BIEN CHEZ
LE DIABETIQUE