Long-Term Anti-Thrombotic Therapy And Medical Therapy in CCS

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Conflicts: none

Case:

66-Year-Old Man With Infrequent Angina, Diabetes, Ischemic Cardiomyopathy, and Atrial Fibrillation

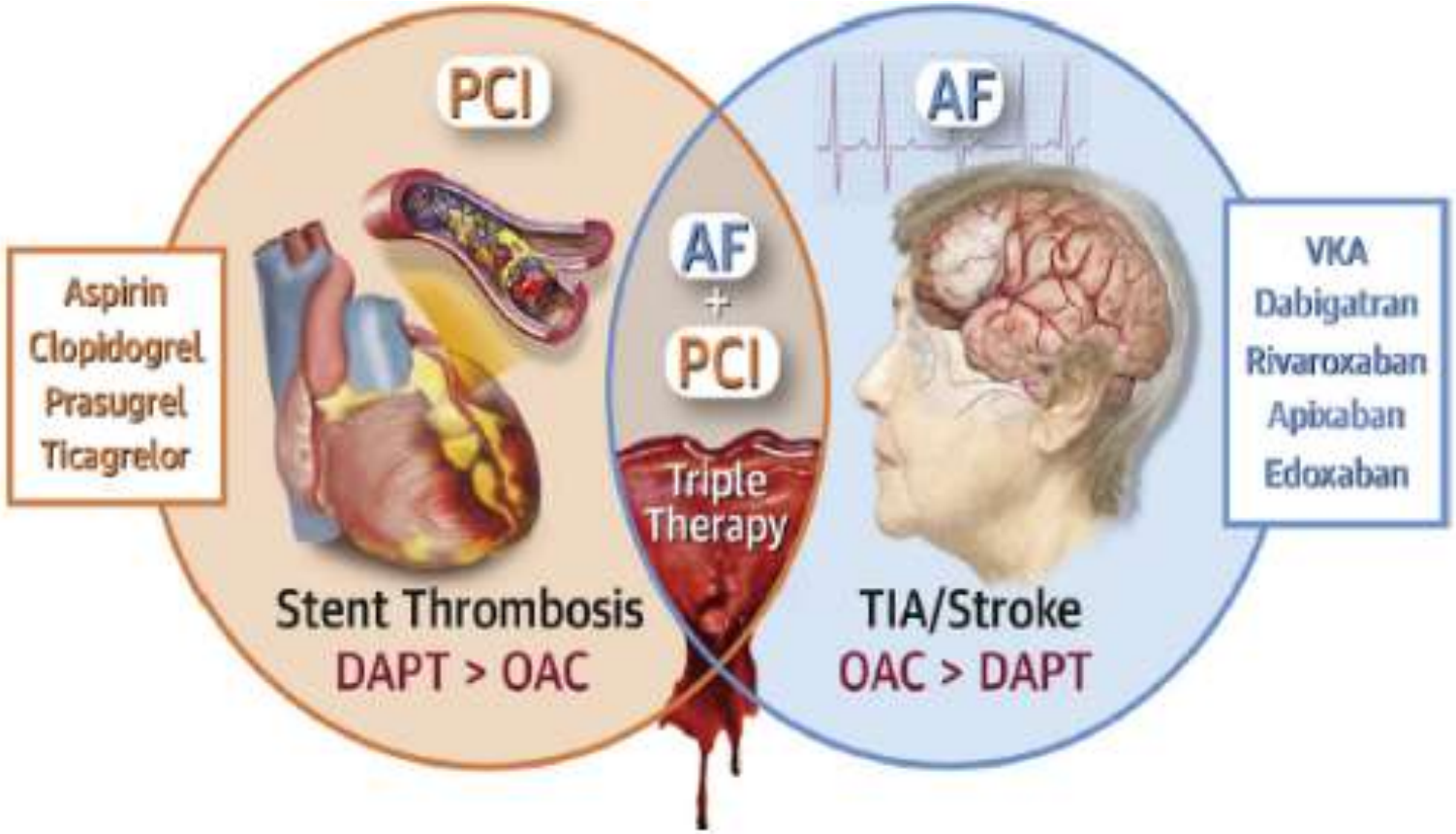
- **ASA dose?, DAPT?, Triple Therapy?**
- **Anti-ischemic medications?**
- **Glycemic control medications?**
- **Cardiomyopathy medications?, Device therapy?**
- **Rate or Rhythm control?**
- **Imaging for risk stratification?**
- **Revascularization to improve survival?**
- **Revascularization to reduce risk for MI?**
- **Revascularization to improve Quality Of Life?**

Aspirin Use

Recommendations for Aspirin Use		
COR	**LOE**	**Recommendations**
IIb	A	1. Low-dose aspirin (75-100 mg orally daily) might be considered for the primary prevention of ASCVD among select adults 40 to 70 years of age who are at higher ASCVD risk but not at increased bleeding risk.
III: Harm	B-R	2. Low-dose aspirin (75-100 mg orally daily) should not be administered on a routine basis for the primary prevention of ASCVD among adults >70 years of age.
III: Harm	C-LD	3. Low-dose aspirin (75-100 mg orally daily) should not be administered for the primary prevention of ASCVD among adults of any age who are at increased risk of bleeding.

Arnett DK, et al. J Am Coll Cardiol 2019;74:1376

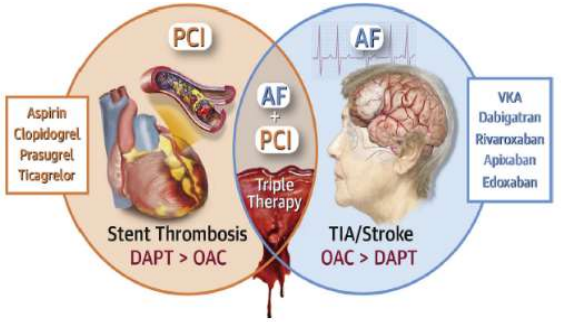
Ischemia vs Bleeding Risk



Controversies in Antiplatelet Therapy

Triple Therapy

Danish Registry	Lancet 2009;374:1967
WOEST	Lancet 2013;381:1107
ISAR-TRIPLE	JACC 2015;65:1619
PIONEER AF-PCI	NEJM 2016;375:2423
RE-DUAL-PCI	NEJM 2017; 377:1513
AUGUSTUS	NEJM 2019;380:1509
ENTRUST-AF-PCI	Lancet 2019;394:1335



Antiplatelet Therapy in Patients With Atrial Fibrillation on Anticoagulation After PCI

COR	LOE	Recommendations
1	B-R	1. In patients with atrial fibrillation who are undergoing PCI and are taking oral anticoagulant therapy, it is recommended to discontinue aspirin treatment after 1 to 4 weeks while maintaining P2Y12 inhibitors in addition to a non–vitamin K oral anticoagulant (rivaroxaban, dabigatran, apixaban, or edoxaban) or warfarin to reduce the risk of bleeding.
2a	B-R	2. In patients with atrial fibrillation who are undergoing PCI, are taking oral anticoagulant therapy, and are treated with DAPT or a P2Y12 inhibitor monotherapy, it is reasonable to choose a non–vitamin K oral anticoagulant over warfarin to reduce the risk of bleeding.

Lawton JS, et al. J Am Coll Cardiol 2022;79:e21

Duration of DAPT: SIHD Treated With PCI

	Recommendations
I B	Daily aspirin 81 mg (75 mg to 100 mg)
I A	BMS: DAPT for a minimum of 1 month
I B	DES: DAPT for at least 6 months

IIb A	High ischemic risk, low bleeding risk: BMS - DAPT > 1 month DES - DAPT > 6 months
IIb C	Low ischemic risk, high bleeding risk: DES - DAPT for at least 3 months

Levine GN, et al. J Am Coll Cardiol 2016;68:1082.

Other DAPT Recommendations

	Perioperative Recommendations
I B	Elective noncardiac surgery should be delayed 30 days after BMS implantation and optimally 6 months after DES implantation.
IIb C	DES: DAPT discontinuation may be considered after 3 months if the risk of further delay of surgery is greater than the expected risks of stent thrombosis.
III B: Harm	Elective noncardiac surgery should not be performed within 30 days after BMS implantation or within 3 months after DES implantation in patients in whom DAPT will need to be discontinued perioperatively.

Levine GN, et al. J Am Coll Cardiol 2016:68:1082.

Proposed Duration of Dual Antiplatelet Therapy After Drug Eluting Stent Implantation in Chronic Coronary Artery Disease Based on Individual Risk

Bleeding Risk \ Ischemic Risk	Low	Moderate	High
Low	6 months	12 months	≥ 30 months
Moderate	3 – 6 months	6 - 12 months	12 months
High	≤ 3 months	3 - 6 months	6 - 12 months

Binder RK, Lüscher TL. Eur Heart J 2015;36:1207.

Conclusions: ASA

- ASA 75-81 mg daily is the best dose
- Drop ASA for routine primary prevention.

  Use very selectively.
- Drop ASA in SIHD patients on anticoagulation
- Avoid NSAIDS, when possible…

Conclusions: DAPT

- Best triple therapy option:

  ASA x1 month, clopidogrel x6 months, DOAC

- Best DAPT option:

  Increased bleeding risk: short DAPT

  Increase ischemic risk: longer DAPT

- Bridging rarely necessary in perioperative management

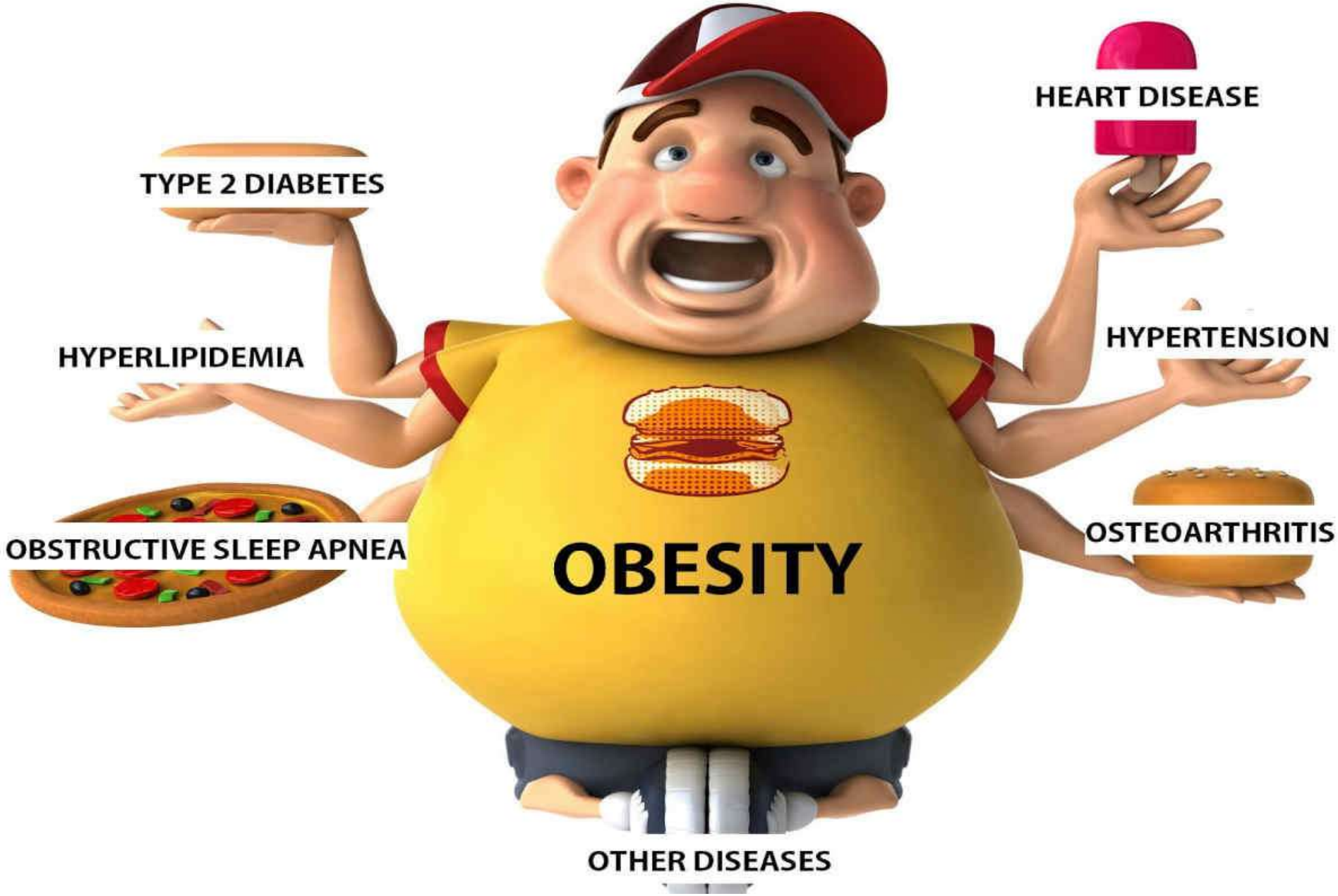
Secondary Prevention In CCD

Lifestyle interventions

- Diet, weight control, smoking cessation, exercise
- Stress reduction, vaccines

Aggressive comprehensive risk factor modification

- HTN: 140/190 or 130/80 mm?
- LDL: 100 or 70 or 50 mg/dL?
- DM: HbA1c 8.0 or 7.0%?
- Obesity: BMI 25 or 30?


HEART DISEASE
TYPE 2 DIABETES
HYPERLIPIDEMIA
HYPERTENSION
OBSTRUCTIVE SLEEP APNEA
OSTEOARTHRITIS
OBESITY
OTHER DISEASES

Angina or Noncardiac Chest Pain?

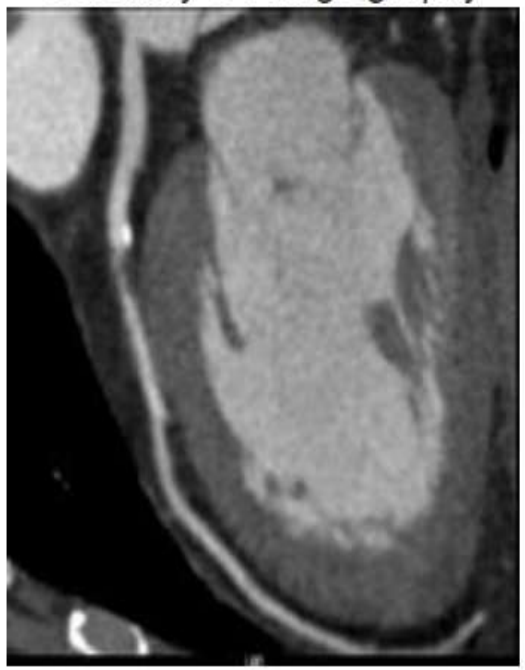
- Chest pain history:
  - Onset
  - Location
  - Duration
  - Intensity
  - Character
  - Radiation
  - Exacerbating factors
  - Alleviating factors
  - Associated symptoms

- Background CVD risk:
  - Smoking
  - Diabetes
  - HTN
  - Hyperlipidemia
  - Obesity
  - Family history
  - Prior CV diagnoses

Imaging in Coronary Artery Disease — Hope of Combining Anatomy and Function

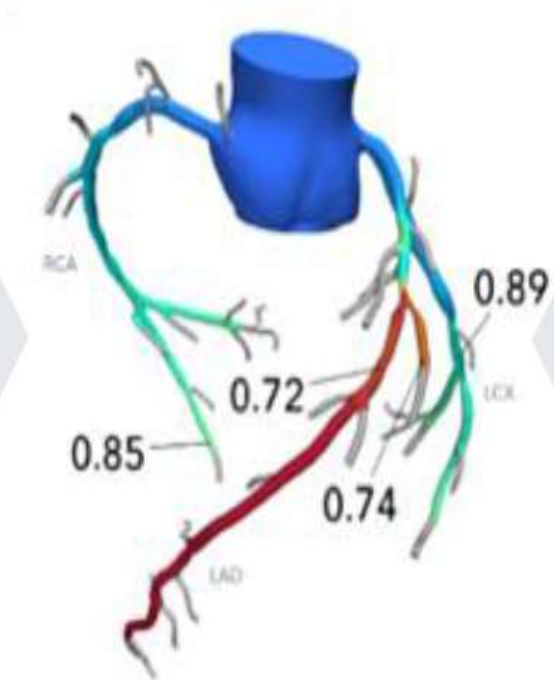
Anatomical Testing

Coronary CT Angiography



Anatomical and Functional

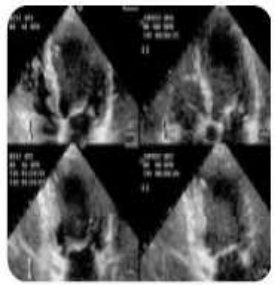
FFR_{CT}



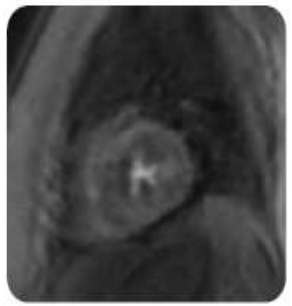
Functional Testing

Treadmill ECG

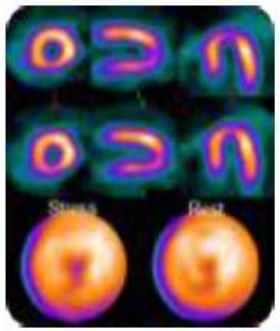
Stress Echo



Stress MRI



SPECT



Revascularization in CCD

No Impact on Death/MI

- Diabetes: BARI 2D
- Optical medical therapy: COURAGE
- Ischemic cardiomyopathy: STICH
- FFR-guided revascularization: FAME-2.
- Ischemic stress test: ISCHEMIA
- CTO

BARI-2D Trial. NEJM 2009;107:636.
COURAGE Trial. NEJM 2007; 356:1503.
STICH Trial. NEJM. 2011;354:1607.
FAME-2 Trial. ;NEJM 2018;379:250.
ISCHEMIA Trial. NEJM 2020;382:1395.

CTO Revascularization: Benefit / Risk Calculation

- Decrease Angina
- Decrease Ischemia

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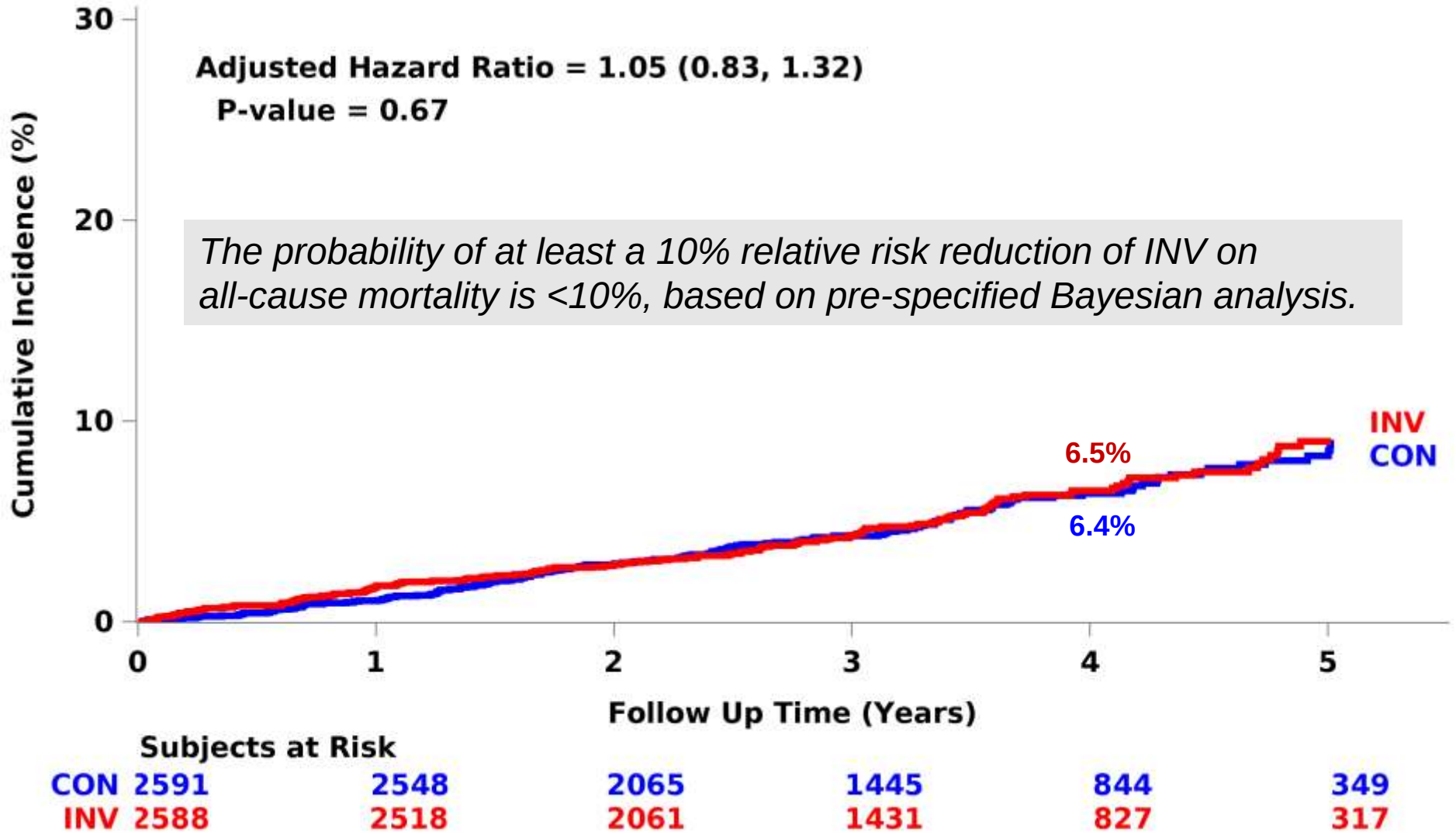
- Increased contrast load
- Increased radiation
- Decreased success rates
- Increased complications
- No change LVEF
- No change mortality risk

EXPLORE. Henriques JPS, et al. J Am Coll Cardiol 2016;68:1622-1632.
DECISION-CTO. Park S, ACC 2017.
Euro-CTO. Werner G, EuroPCR 2017.

Med Rx vs. PCI: Angina/QOL at ≥1 Year

Trial	QOL	Angina	ETT
ACME	PCI better	PCI better	PCI better
ACME 2	↔	↔	↔
MASS		PCI better	
ACIP		PCI better	PCI better
RITA 2	PCI better	PCI better	
AVERT	PCI better	PCI better	PCI better
MASS II	PCI better	PCI better	
TIME	PCI better	PCI better	PCI better

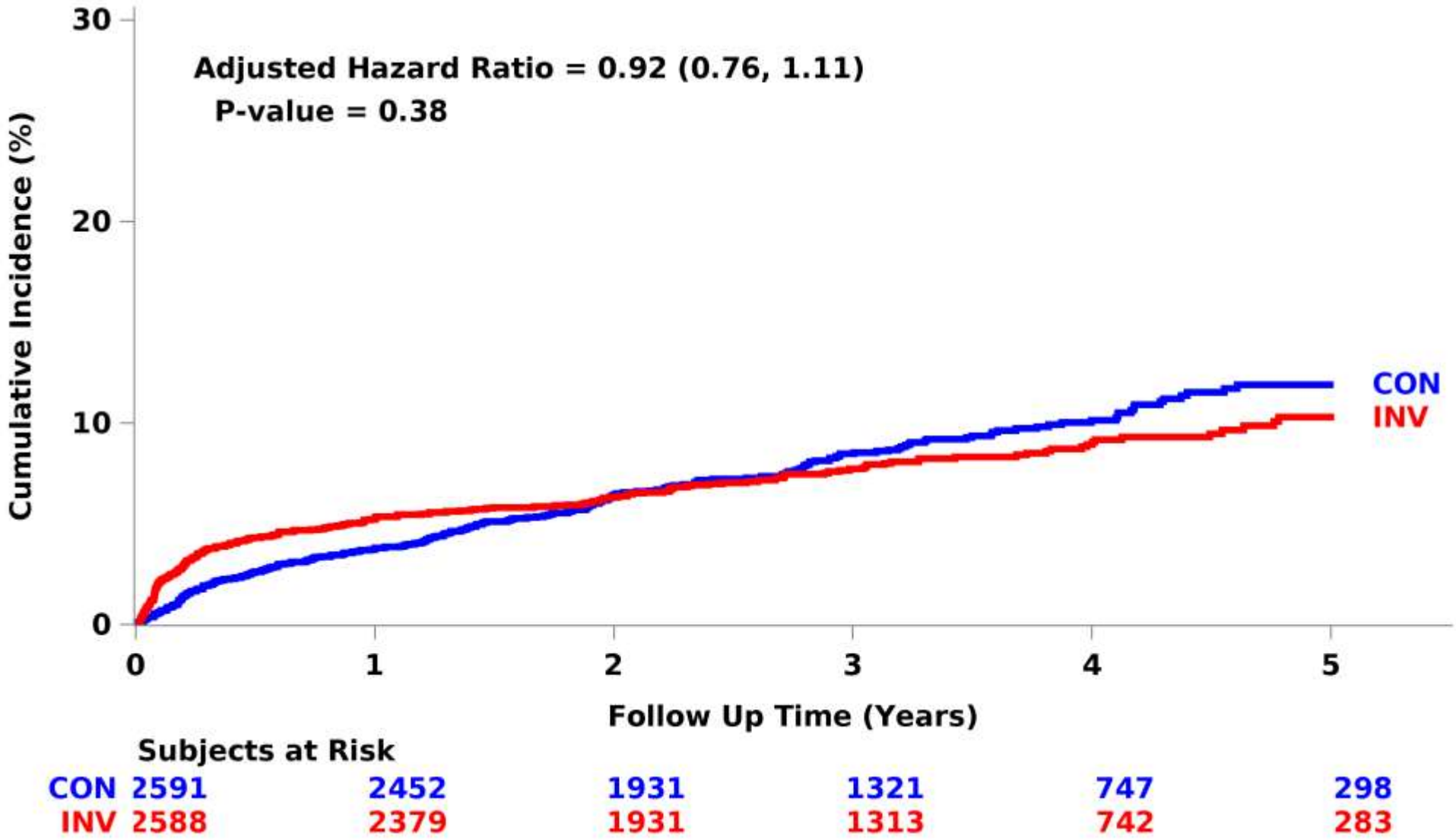
ISCHEMIA Trial: All-Cause Death



The probability of at least a 10% relative risk reduction of INV on all-cause mortality is <10%, based on pre-specified Bayesian analysis.

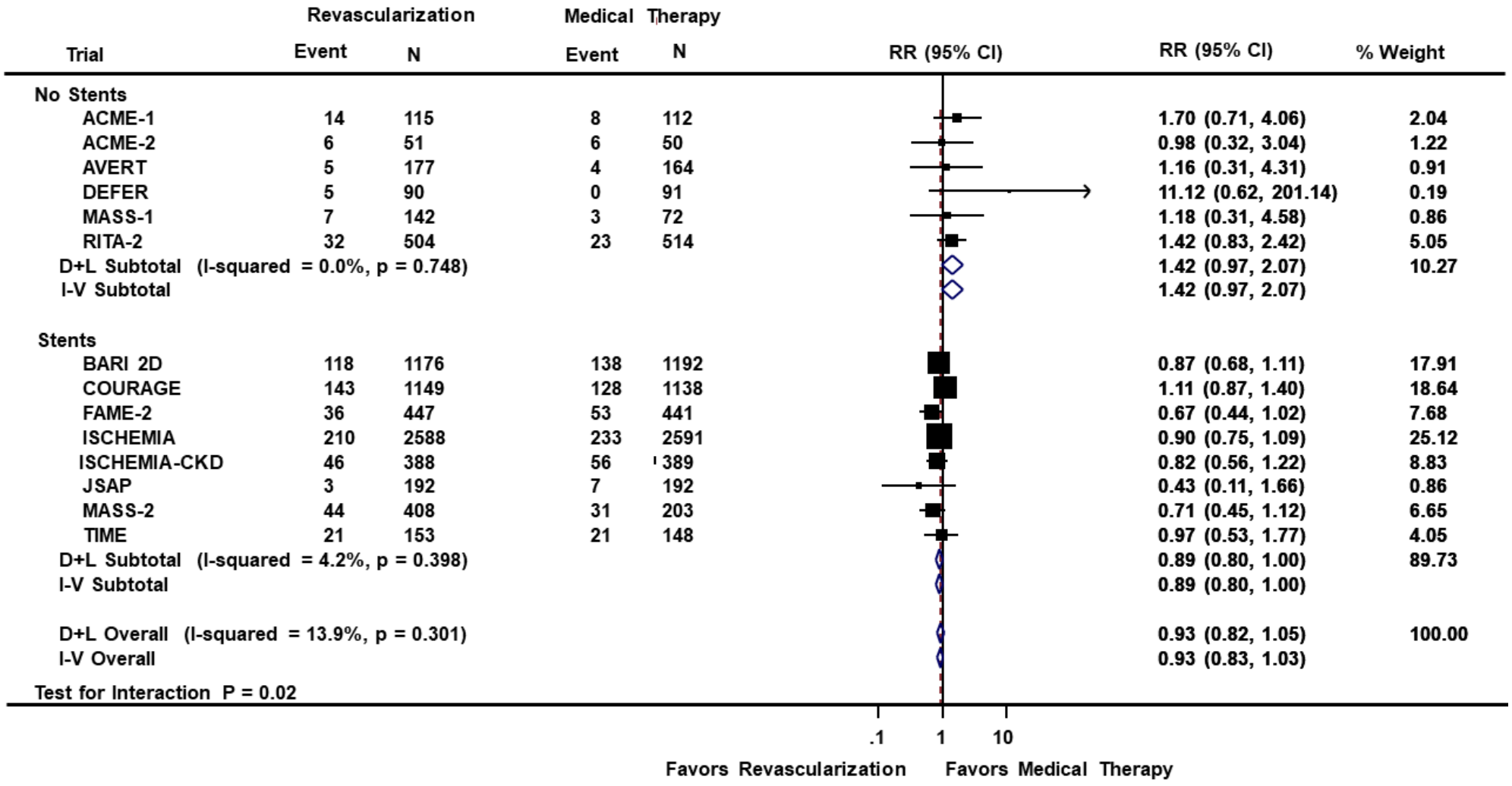
Maron DJ, et al. NEJM 2020;382:1395

ISCHEMIA Trial: Myocardial Infarction



Maron DJ, et al. NEJM 2020;382:1395

Routine Revasc vs. Initial Medical Therapy
Myocardial Infarction



Bangalore et al. Circulation. 2020 Sep;142:841-857

Management of Angina in CCD

- Nitrates
- Beta Blockers
- Calcium Channel Blockers
- Ranolazine

Management of HF in CCD

- Diuretics for volume control
- ACEi, ARB, ARNI
- SGLT2i
- BB
- MRA
- ICDs and CRTs

Management of Atrial Fibrillation in CCD

- Rate control
- Anticoagulation
- Rhythm control

Long-Term Anti-Thrombotic Therapy And Medical Therapy in CCS

- Medical care is increasingly complicated with older patients, more comorbidities, more treatment options
- Prognosis is good with lifestyle interventions and risk factor control
- Adherence to GDMT is difficult
- Revascularization improves QOL, not death/MI risk