

1<sup>ère</sup> Année de Médecine

Cas de liaison

# Athérosclérose #7

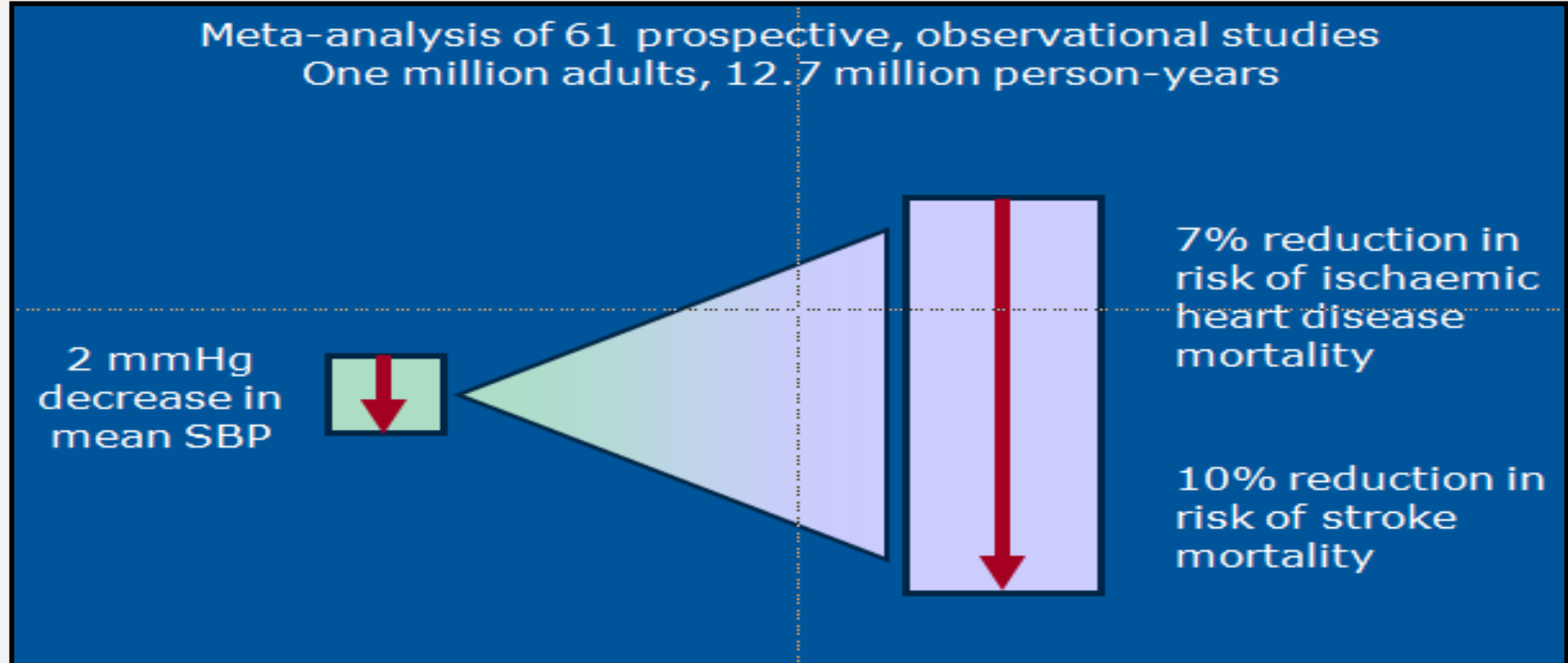
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[www.cardiology-geneva.ch](http://www.cardiology-geneva.ch)

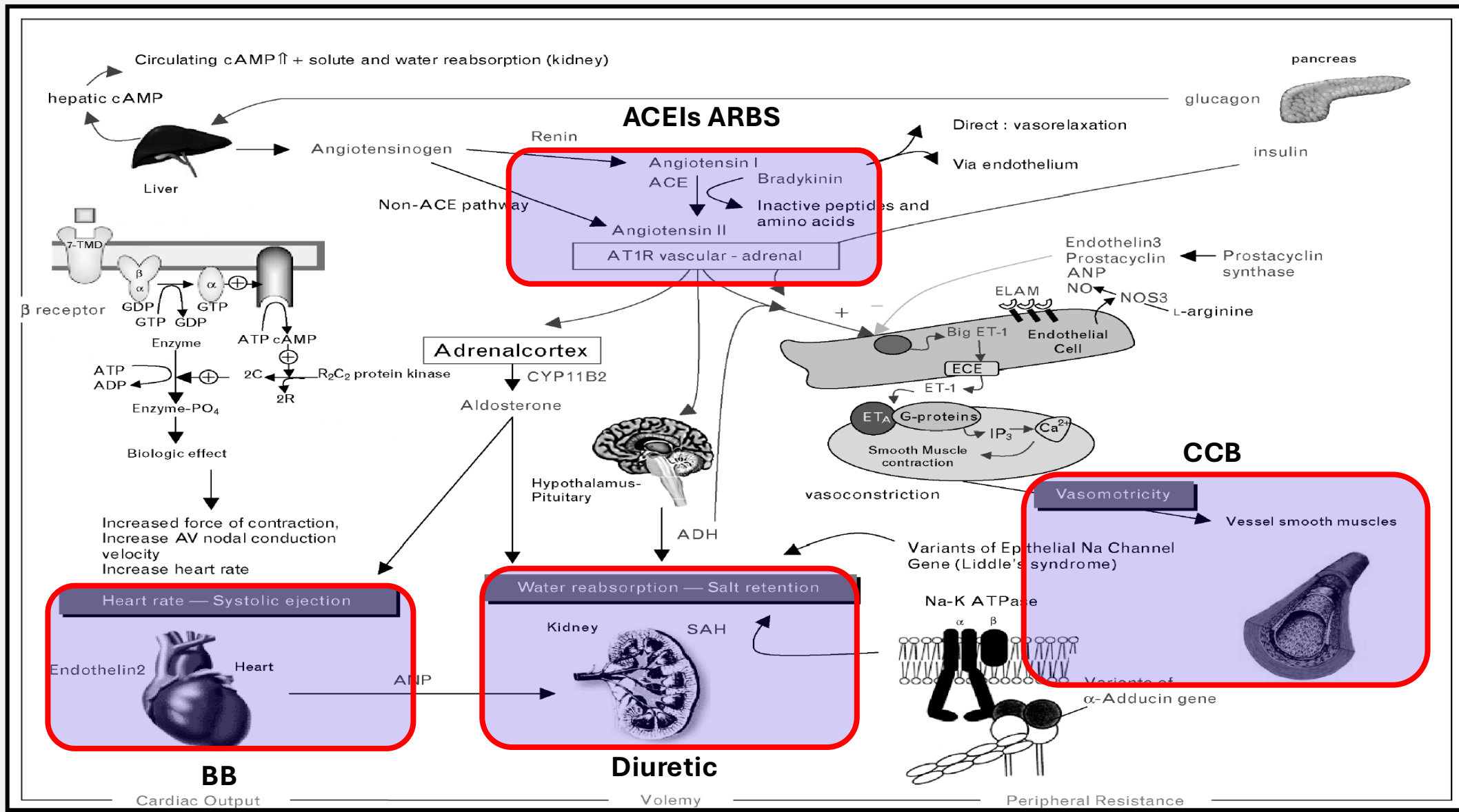
Genève, le 5 mars 2026

# Lowering blood pressure reduces CV risk

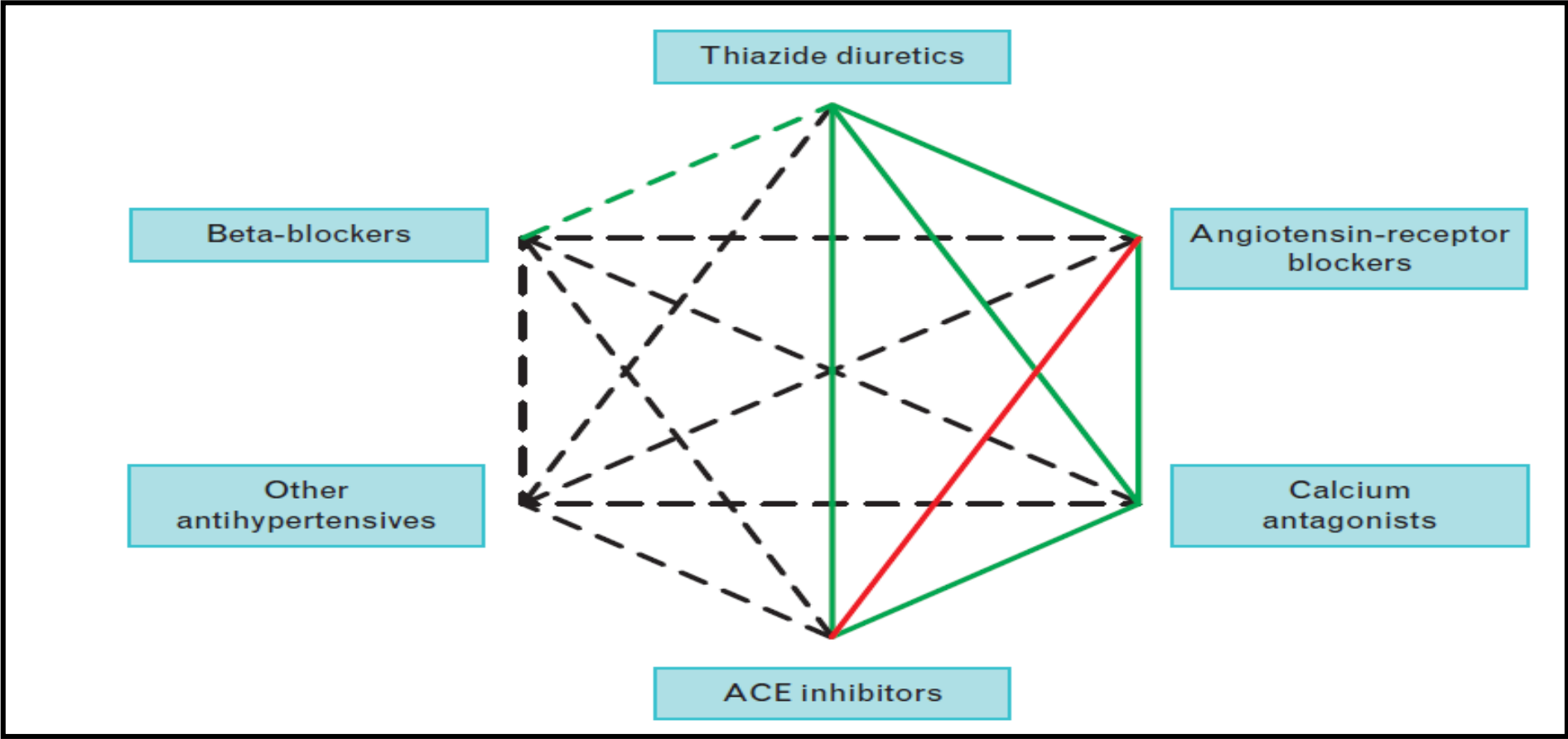
Small SBP reductions yield significant benefit



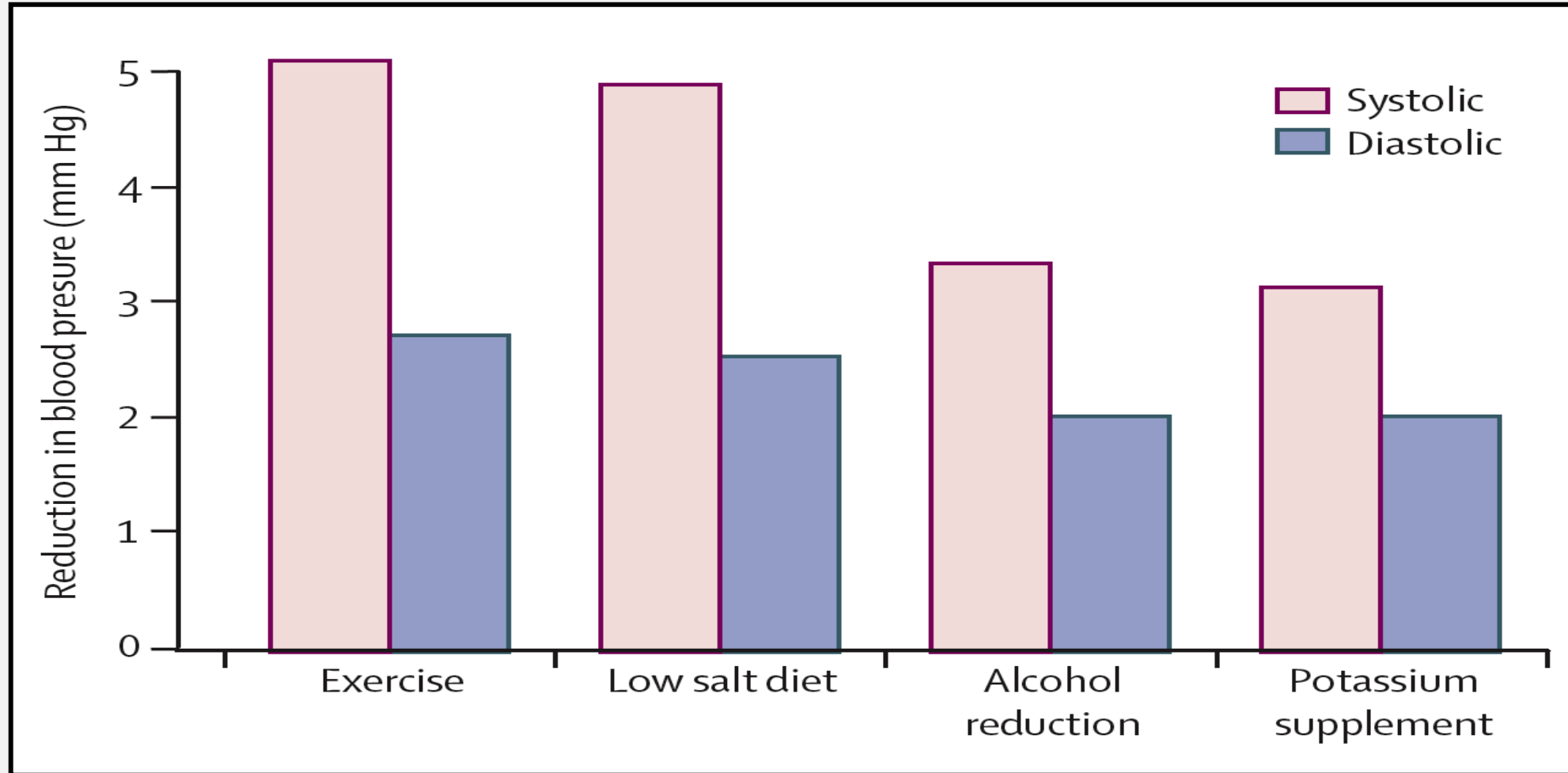
# Regulation of blood pressure



# Blood pressure treatment combinations



# Estimated decrease in blood pressure mediated by non-pharmacological intervention in hypertension



# Fréquence cardiaque et espérance de vie chez les mammifères

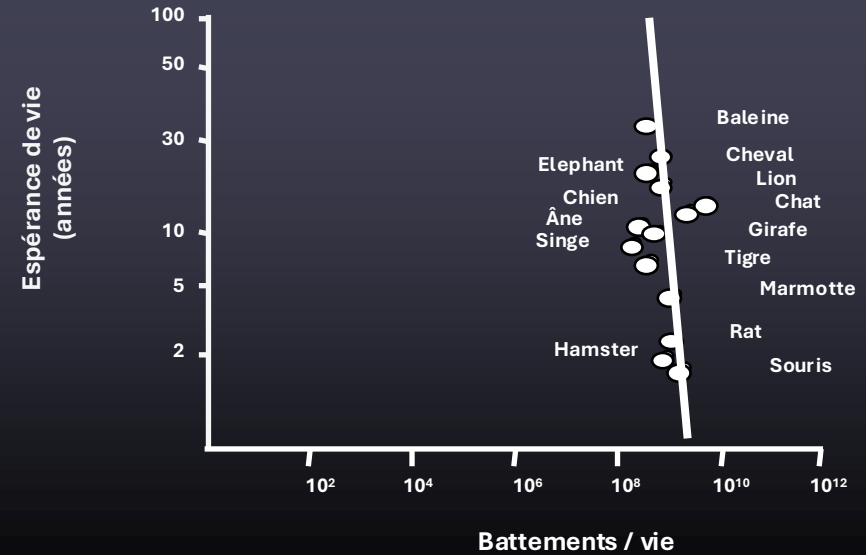
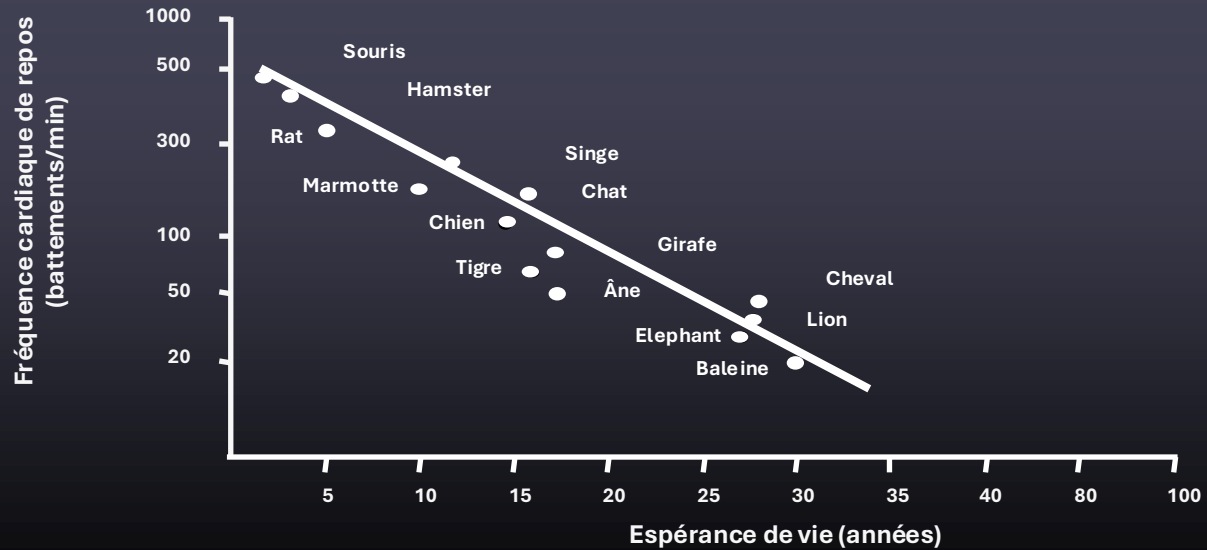


**Souris**  
**380-480/min**



**Baleine**  
**6-40/min**

# FC et espérance de vie chez les mammifères



Nbre de pulsations cardiaques par vie

$9 \times 10^8$

Nbre de litres d'oxygène par kilo de masse corporelle et par vie

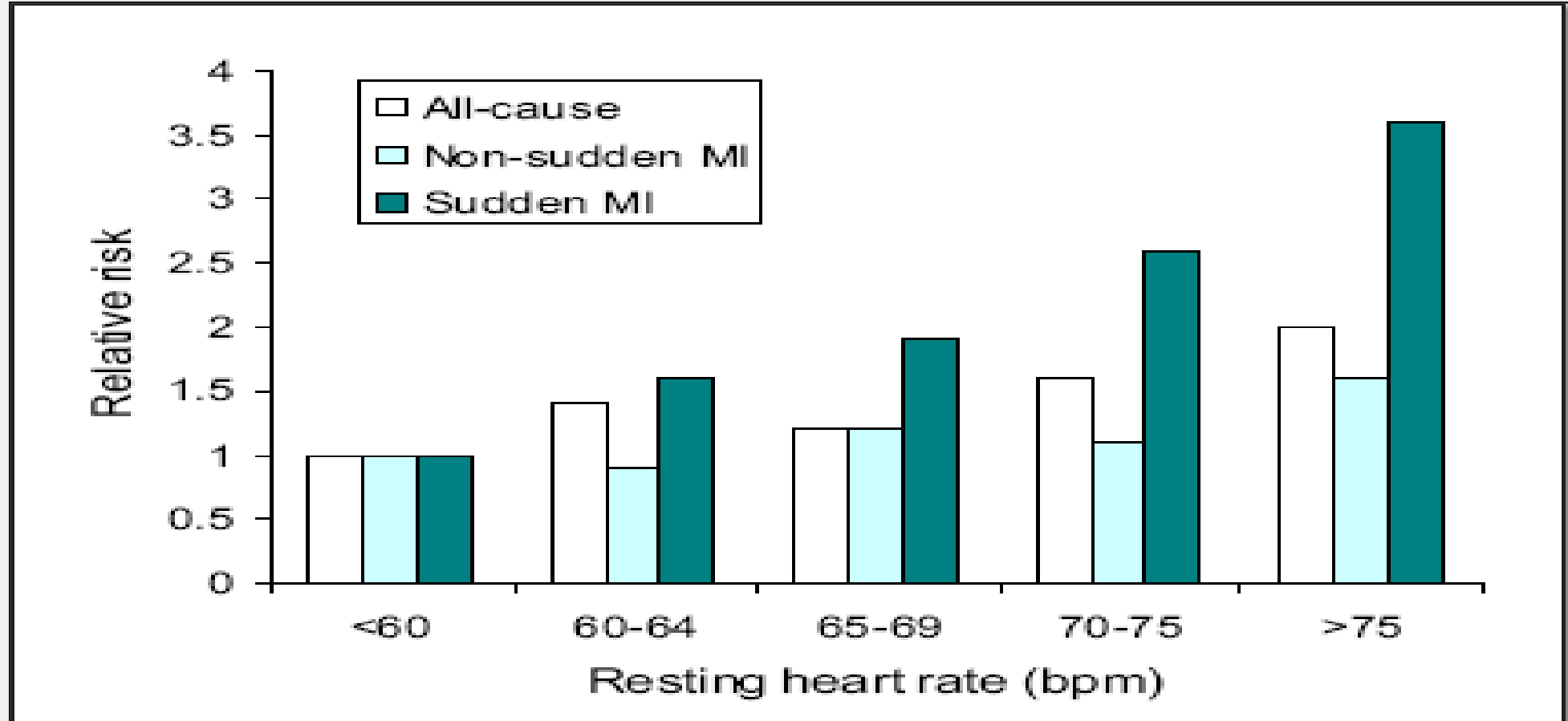
35'000

Nbre de moles d'ATP par kilo de masse corporelle et par vie

8'000

# FC et espérance de vie dans la population générale

Patients sains



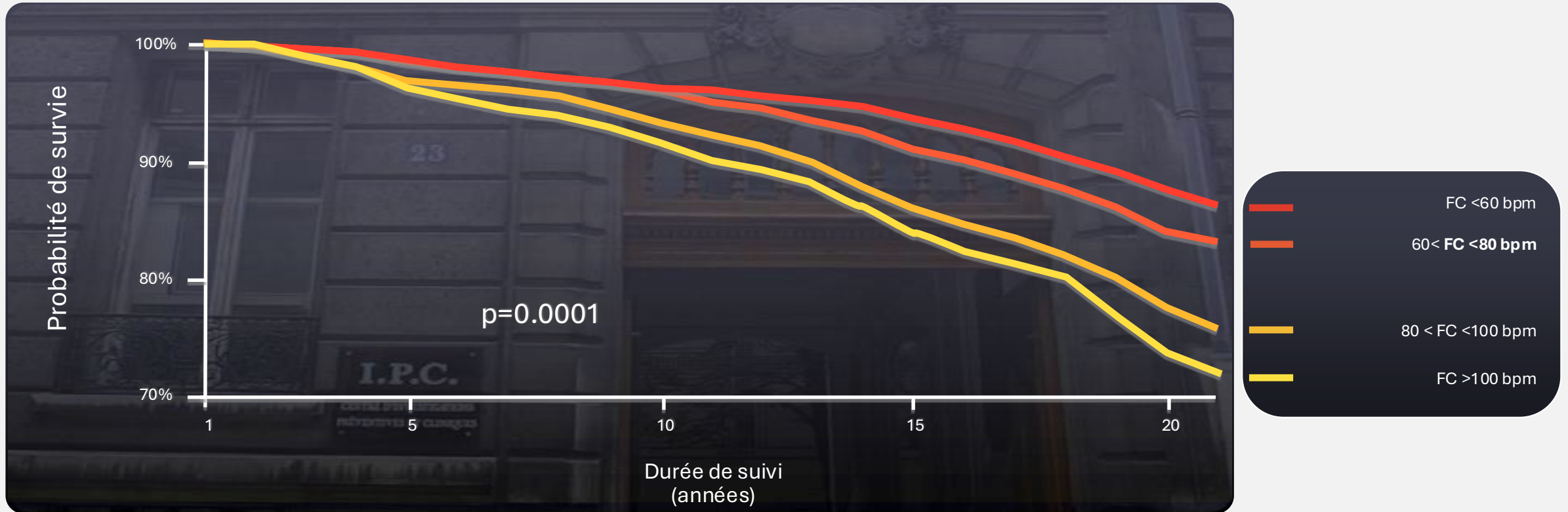
• 5713 hommes

• Suivi moyen 23 ans

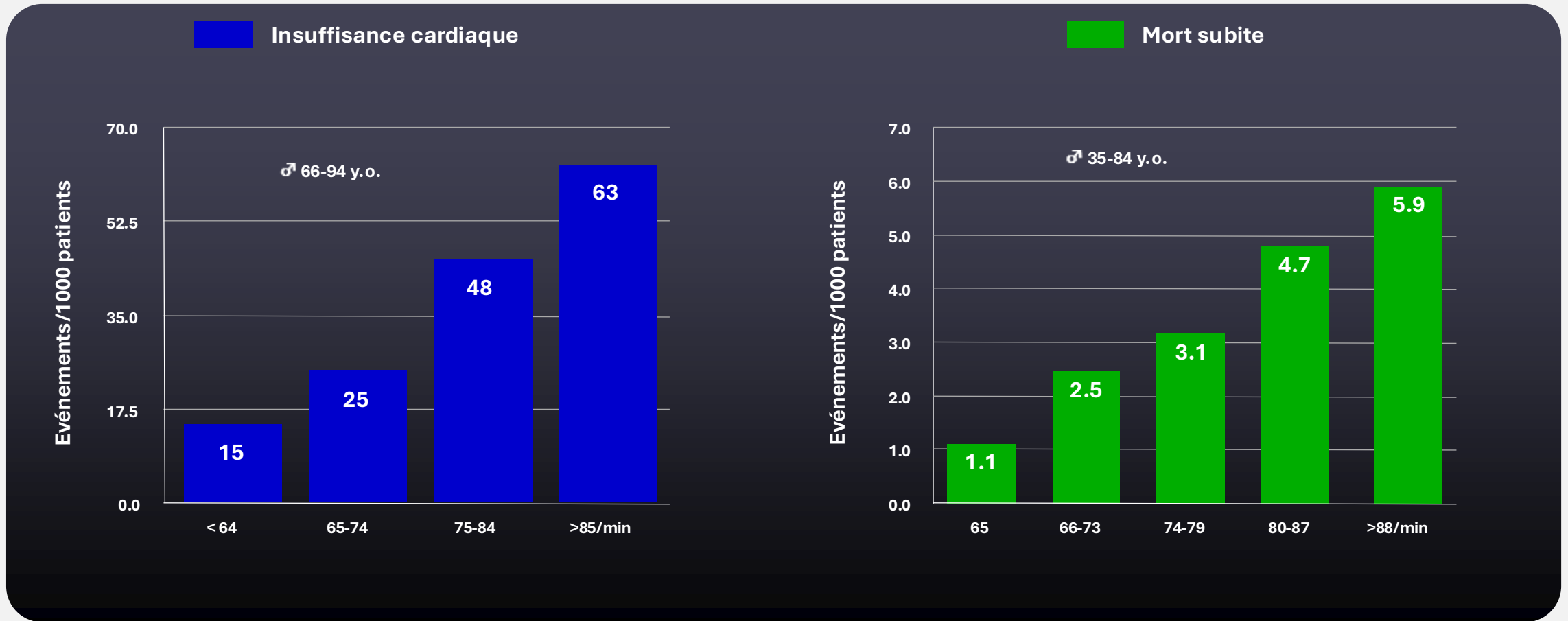
# FC et espérance de vie dans la population générale



- 19'386 sujets - "Check-up"
- FC par ECG
- Suivi moyen: 18.2 ans

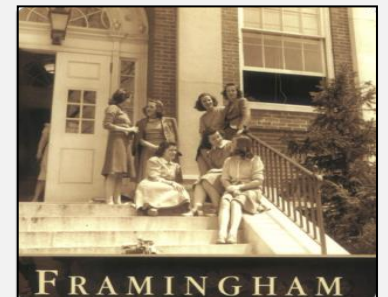


# FC et espérance de vie dans la population générale



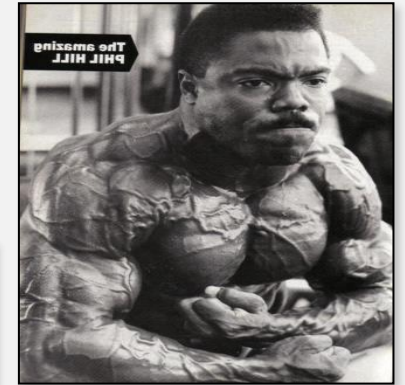
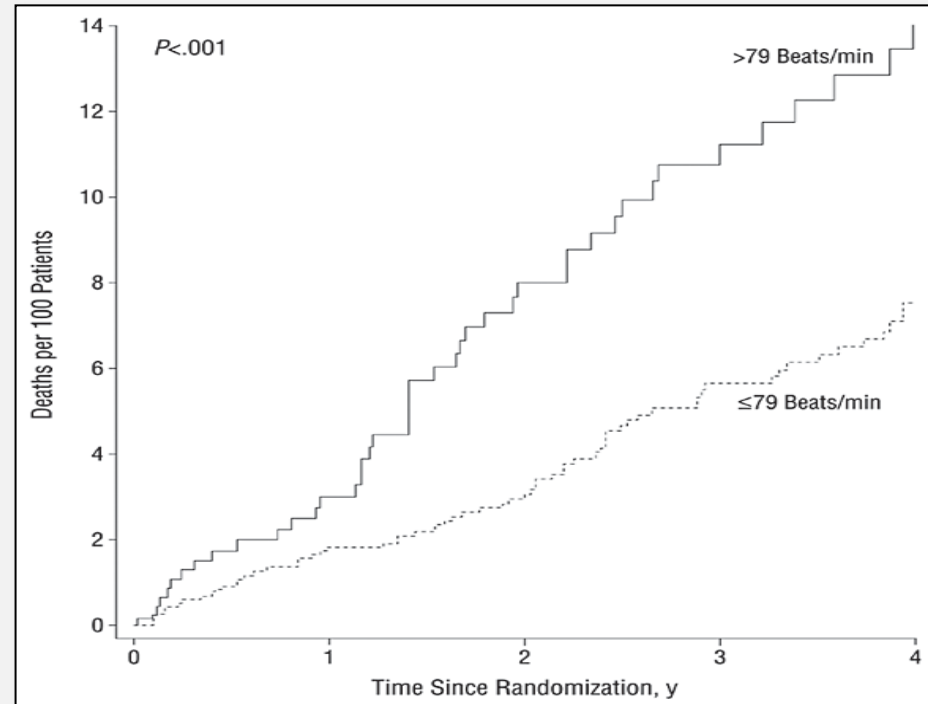
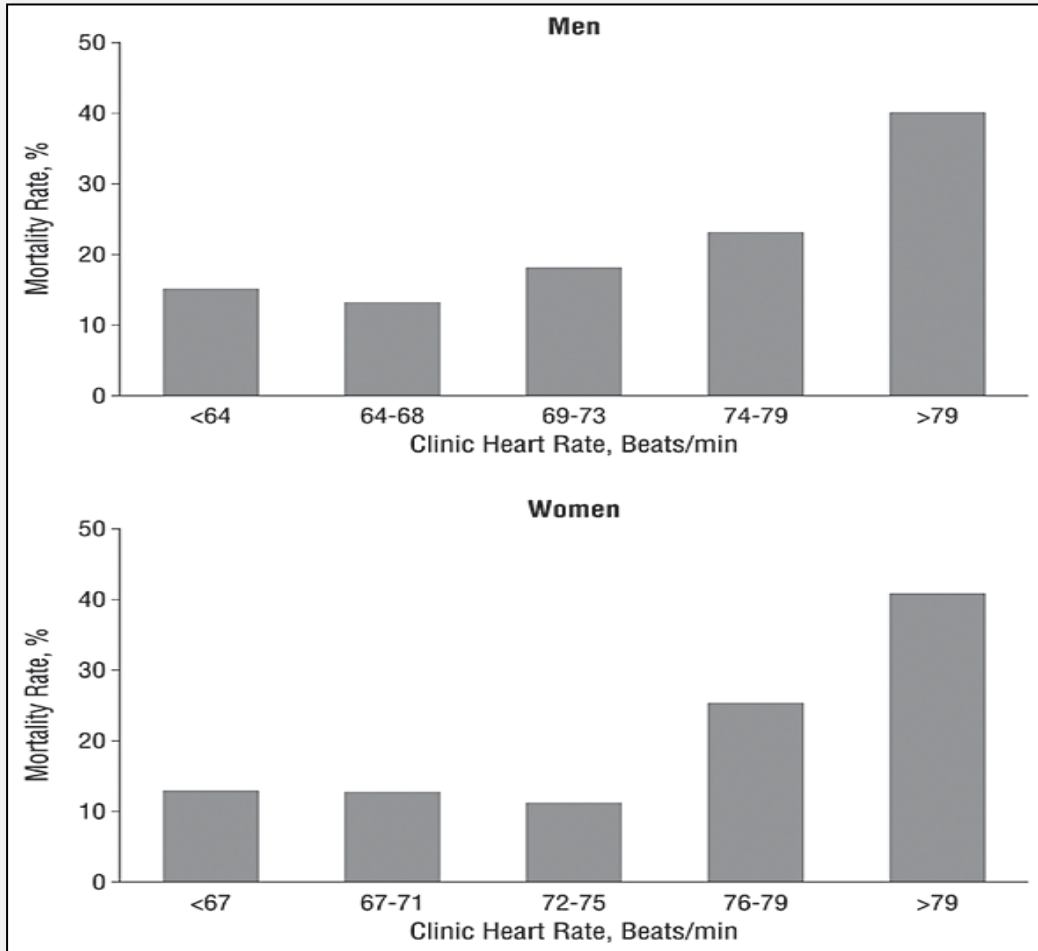
• 5070 personnes

• Suivi moyen 30 ans



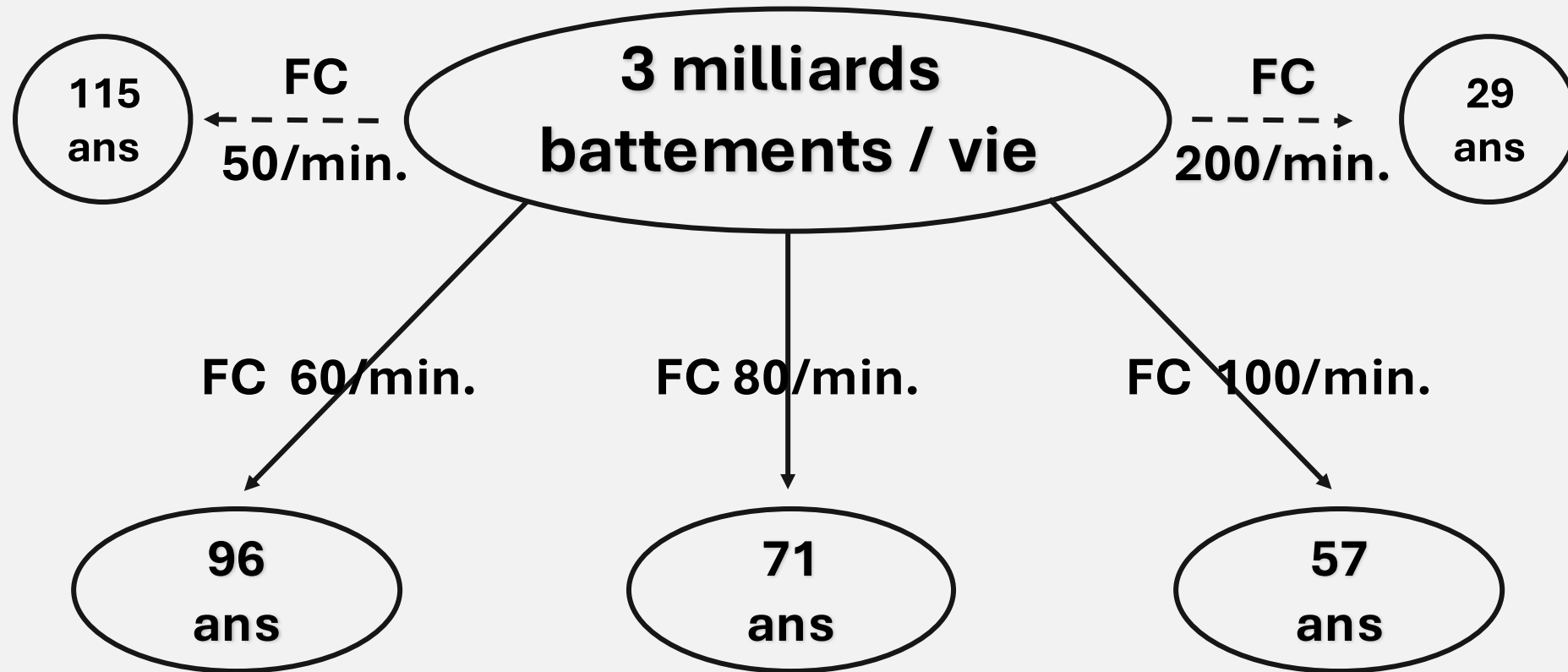
# FC et espérance de vie dans la population générale

## Patients avec hypertension

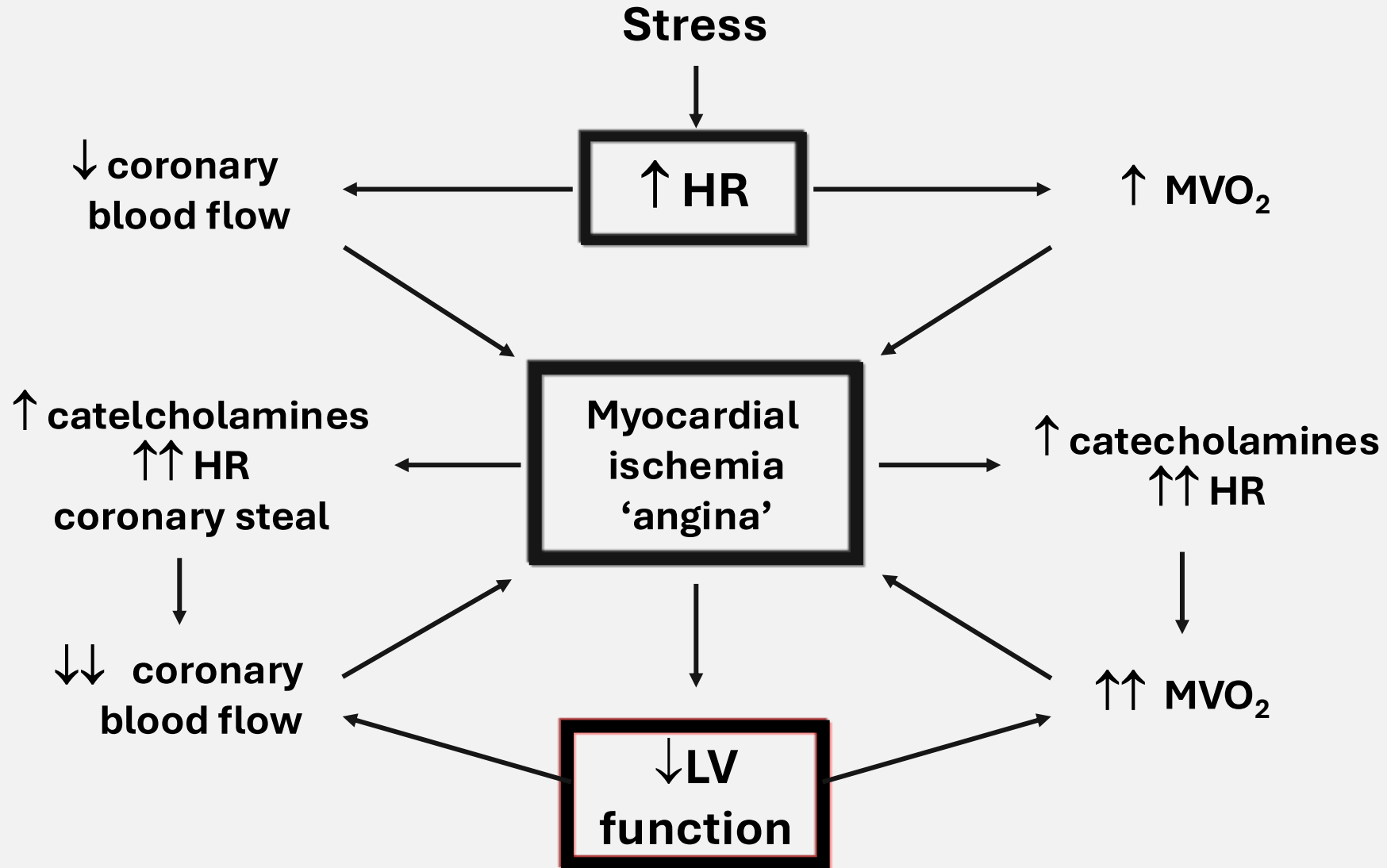


- 4'682 patients
- Median follow-up was 2 years

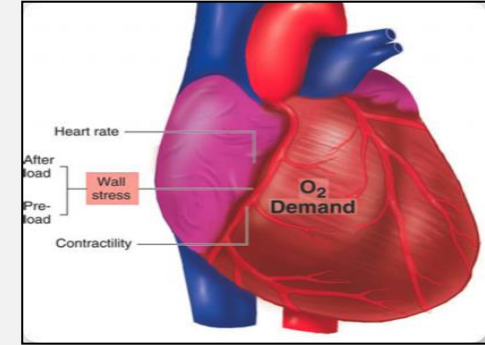
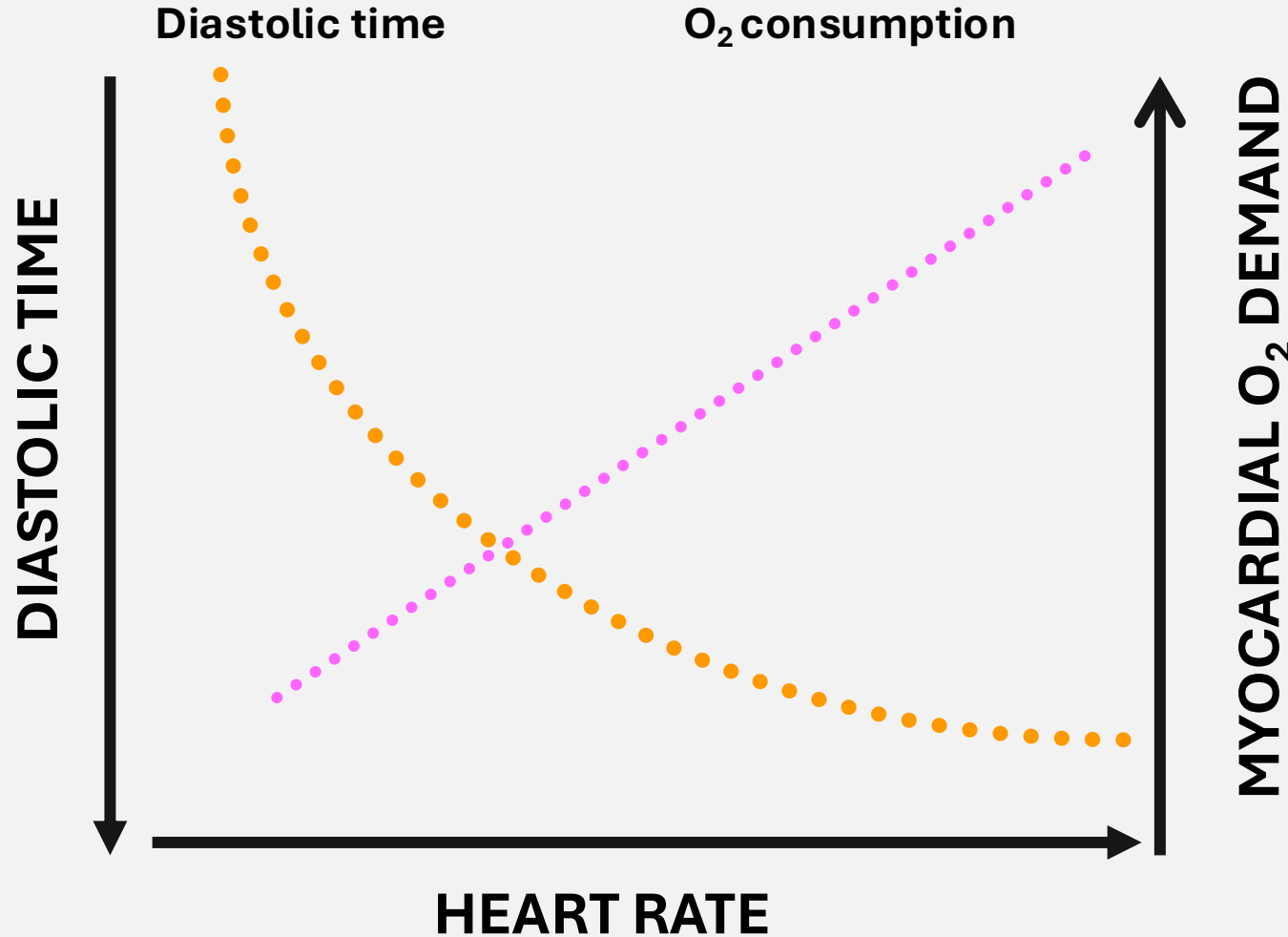
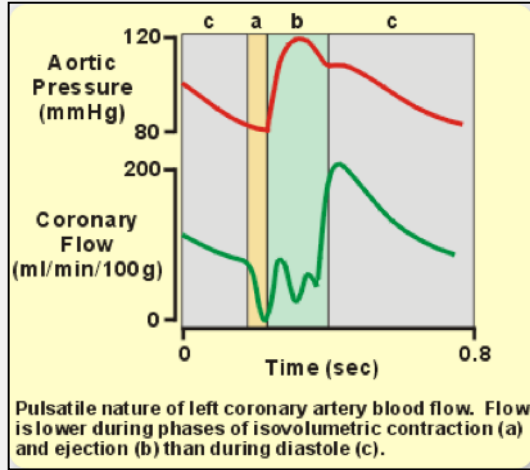
# FC et espérance de vie chez les mammifères



# Cercle vicieux de l'ischémie myocardique: Le rôle de la fréquence cardiaque

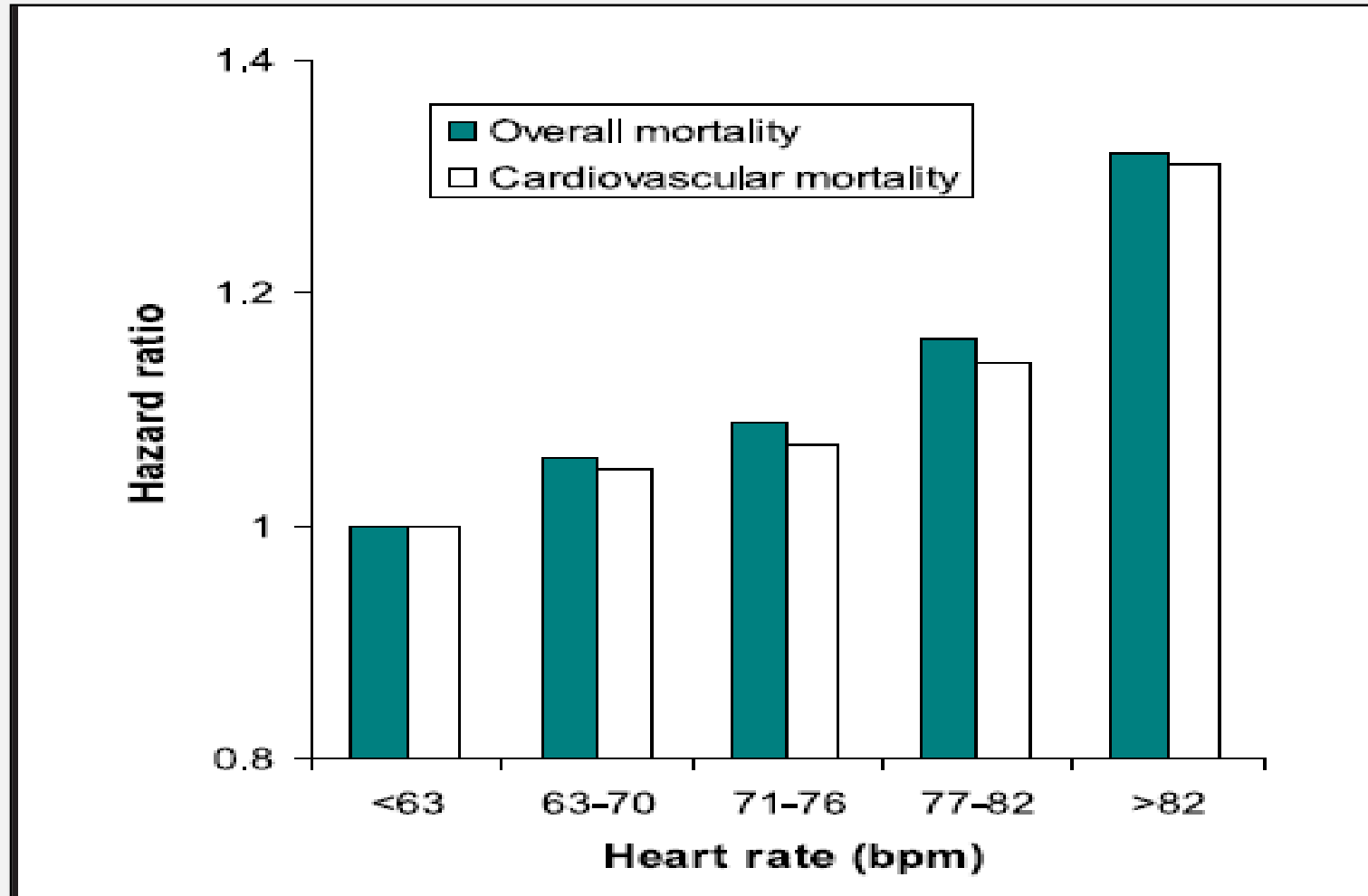


# La fréquence cardiaque est un facteur d'ischémie myocardique



# FC et espérance de vie chez l'homme

Patients avec maladie coronarienne



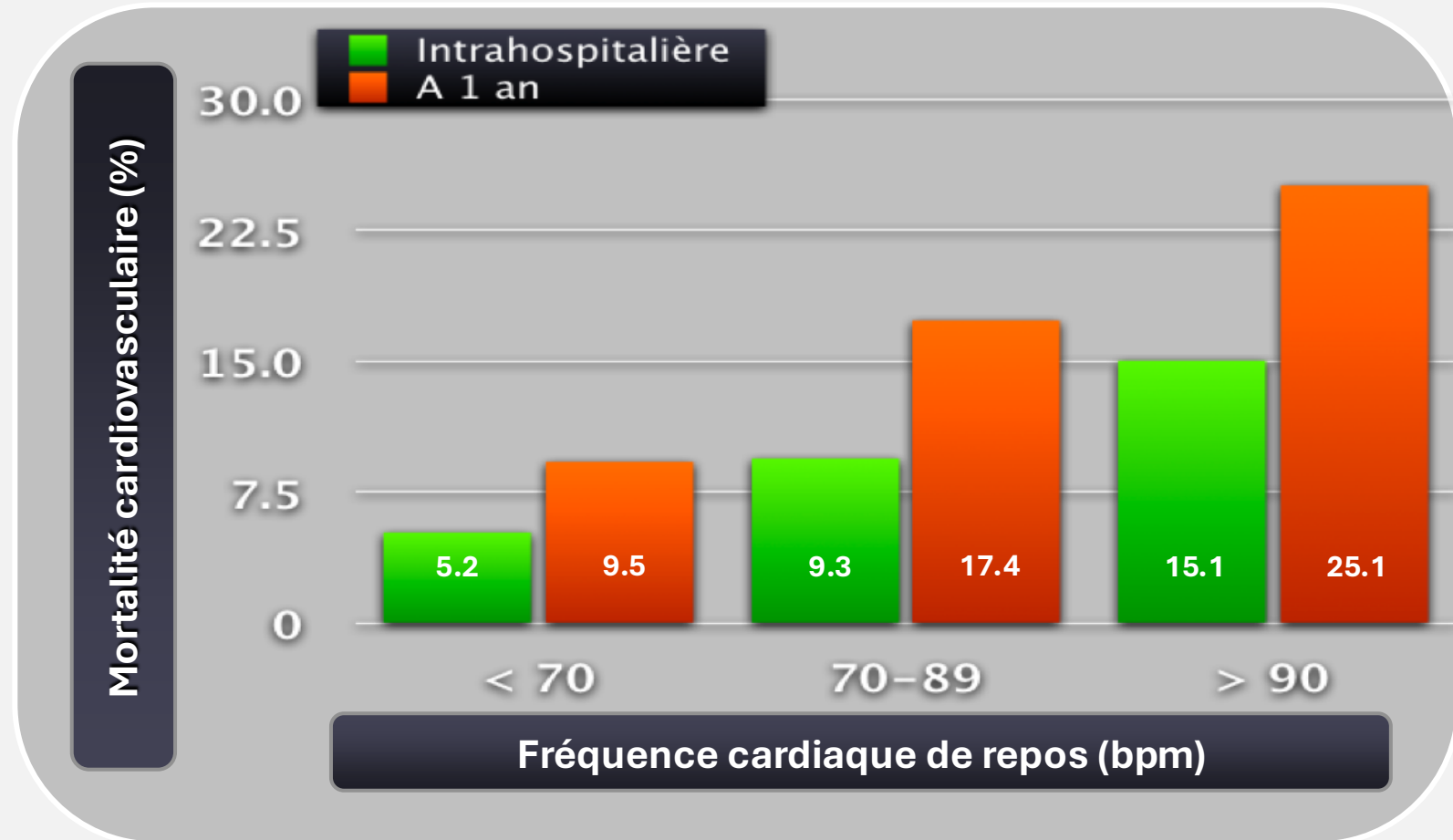
•24 913 patients

•Median follow-up was 14.7 years

# FC et espérance de vie chez l'homme

Patients avec infarctus aigu du myocarde

- Suivi clinique 1 an
- 1044 patients
- Admission pour infarctus aigu du myocarde
- Prise de pouls et TA à l'admission



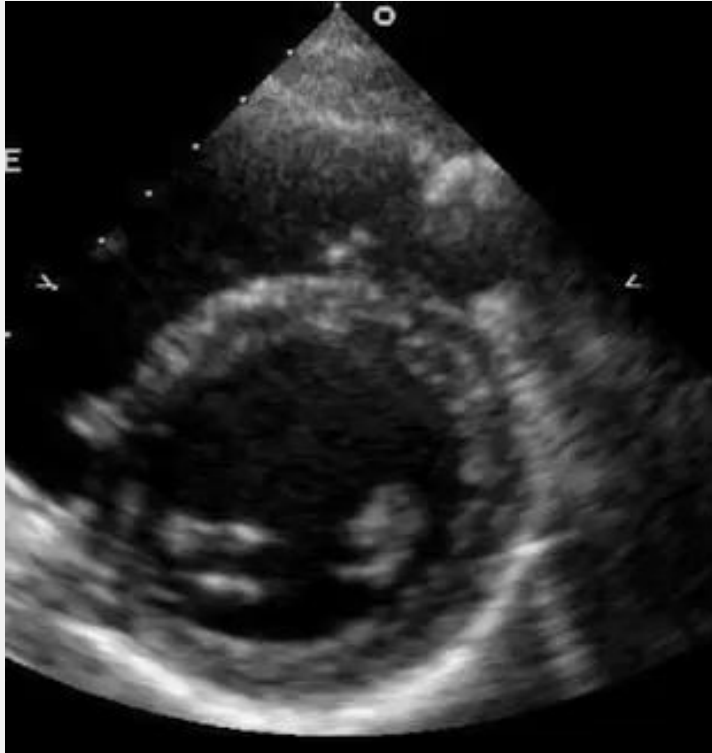
# Ralentir la fréquence cardiaque



**la consommation en O<sub>2</sub>**



**le stress hémodynamique**



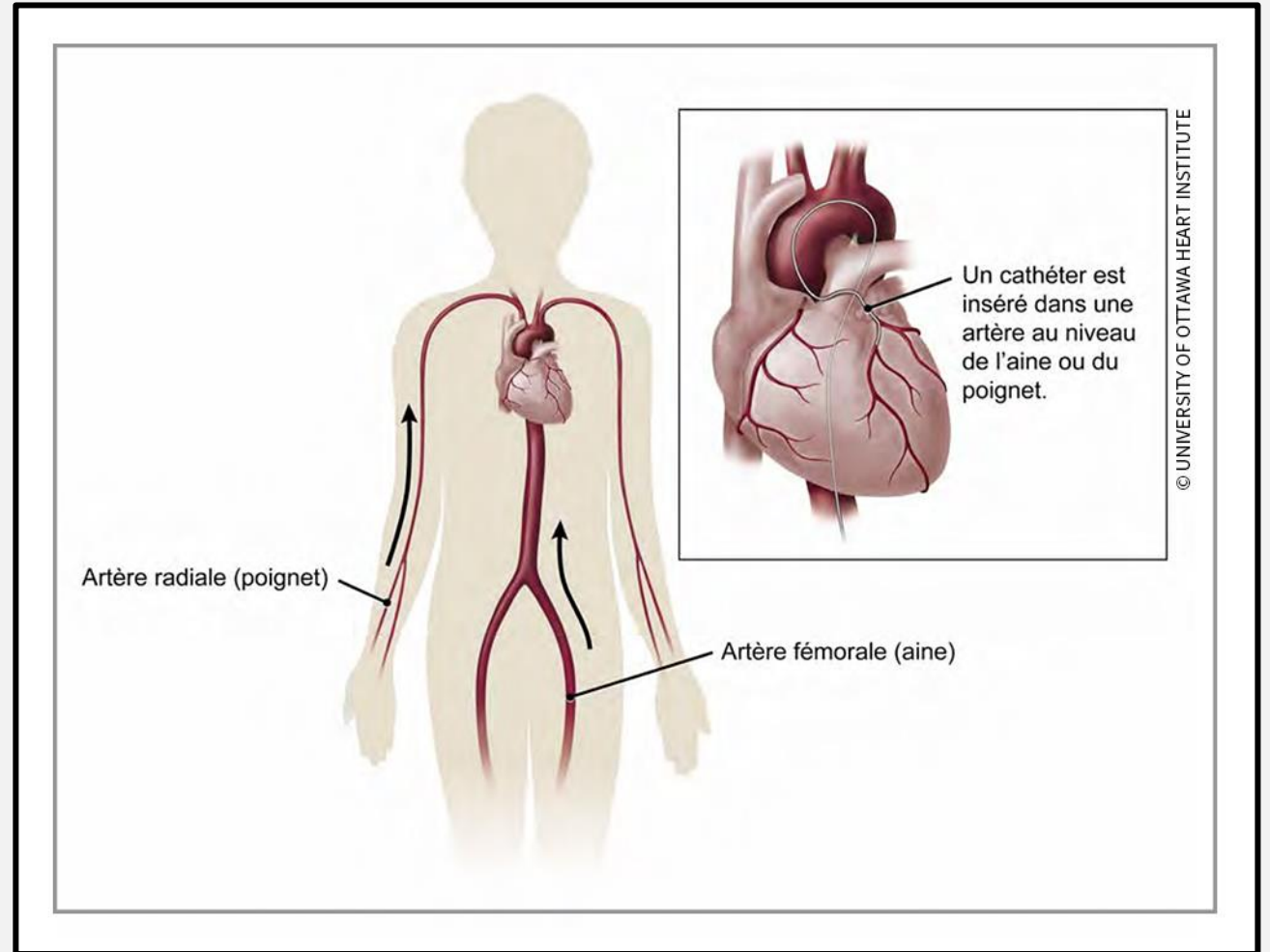
**Améliorer le remplissage**



**Favoriser la perfusion des  
couches profondes**

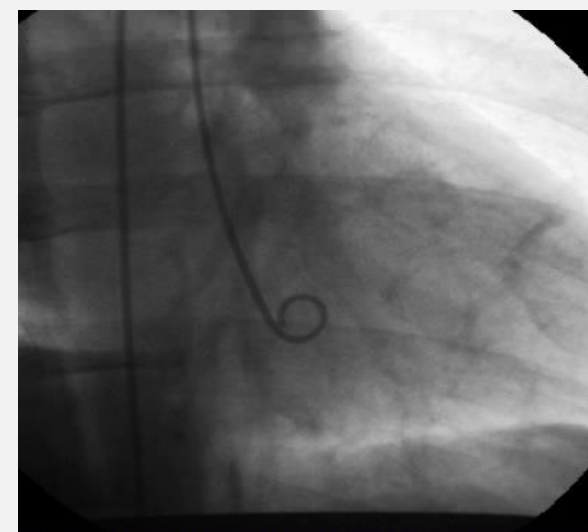
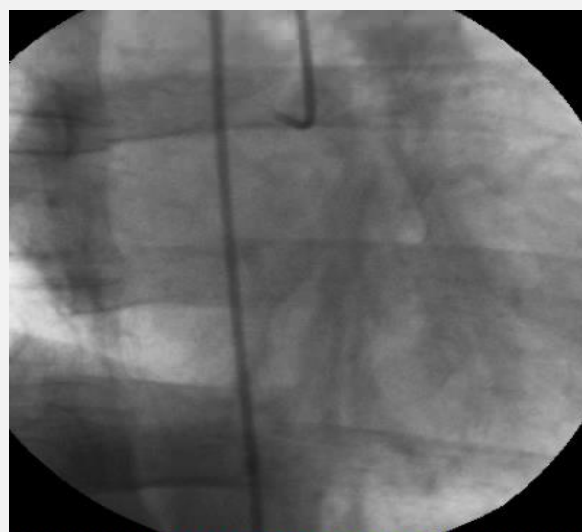
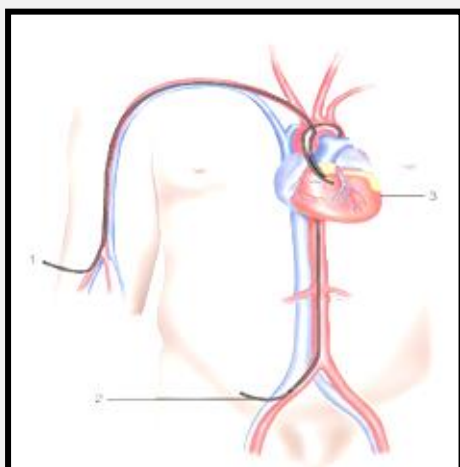
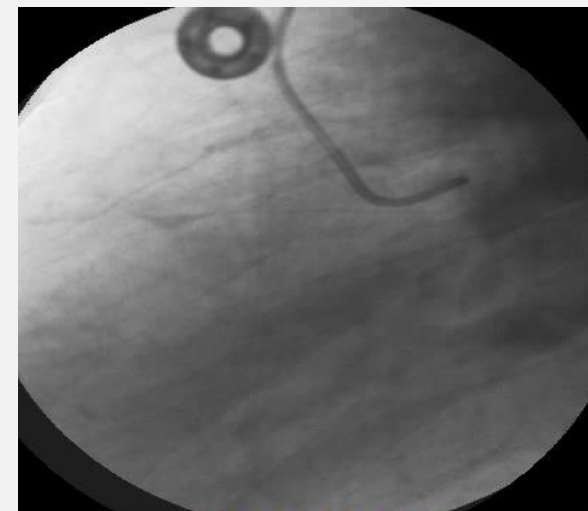
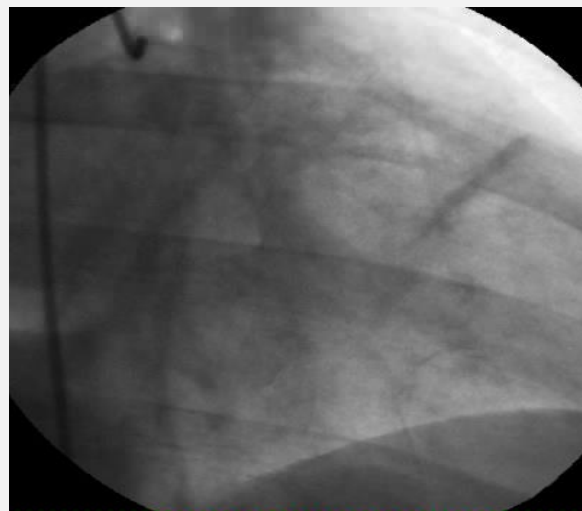
# Traitement invasif de l'athérosclérose

## Angiographie



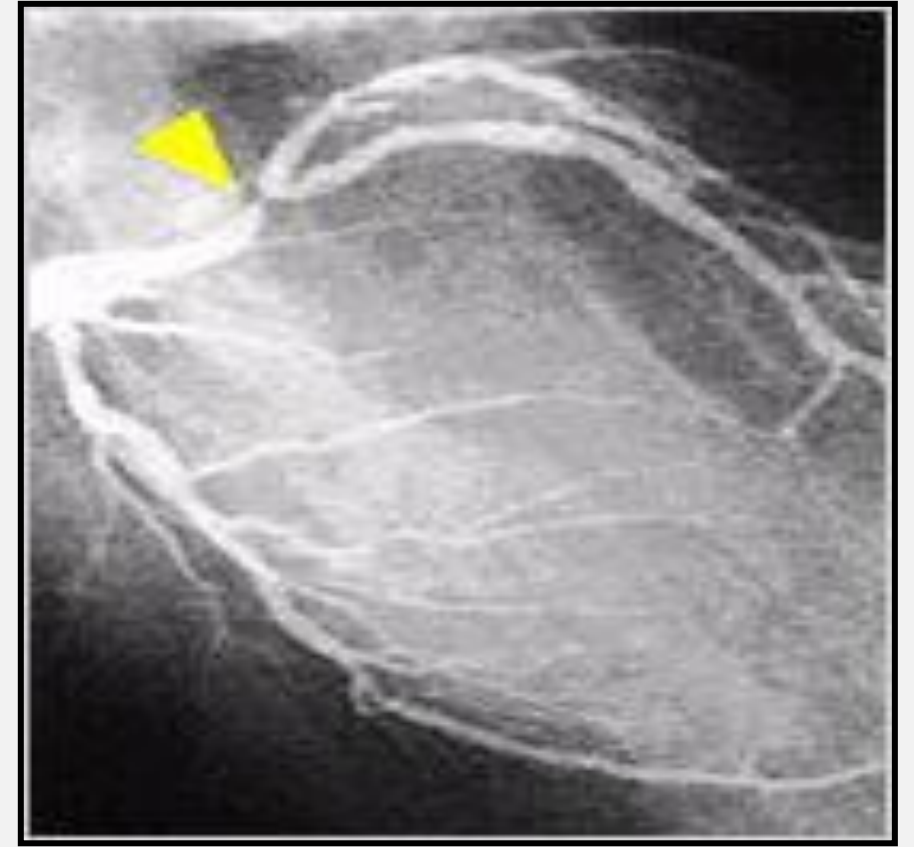
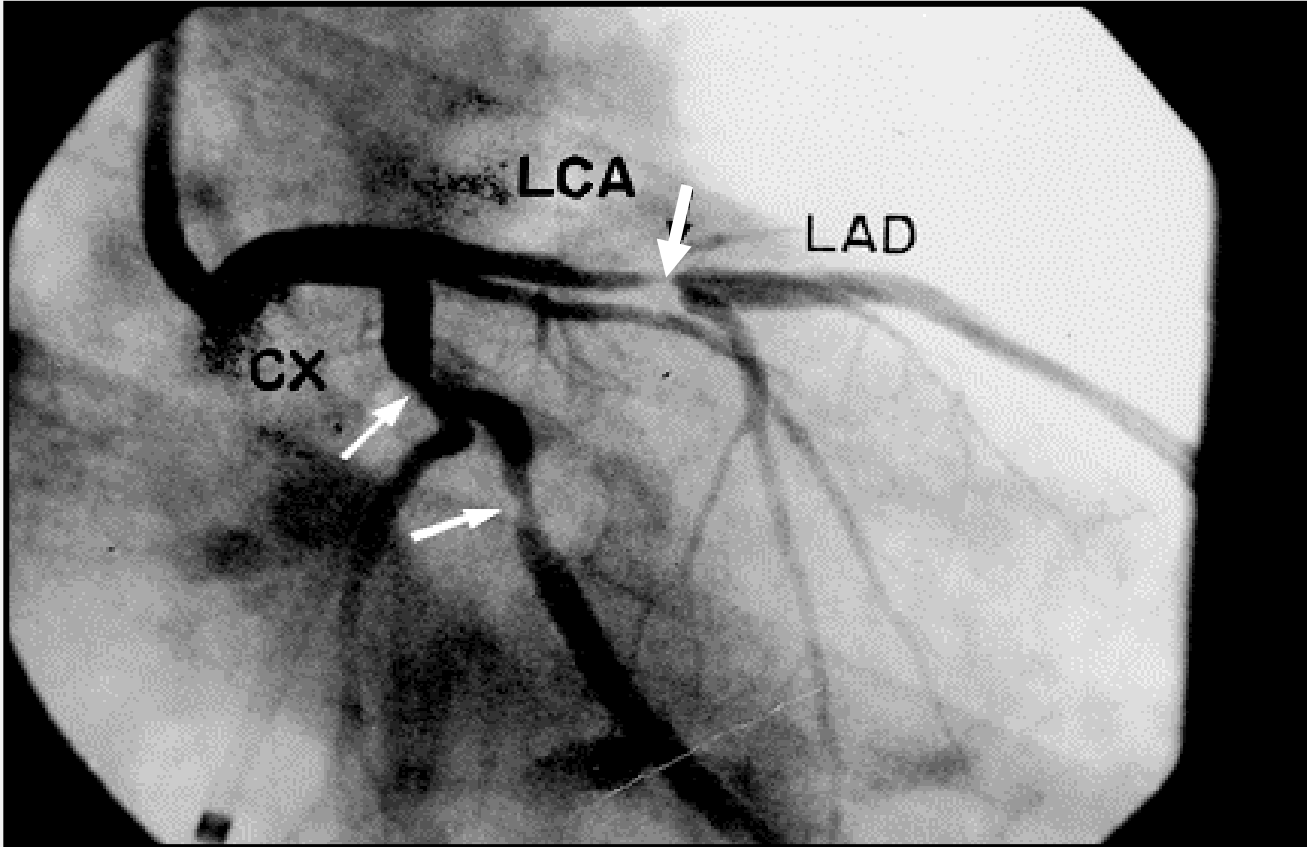
# Traitement invasif de l'athérosclérose

## Angiographie



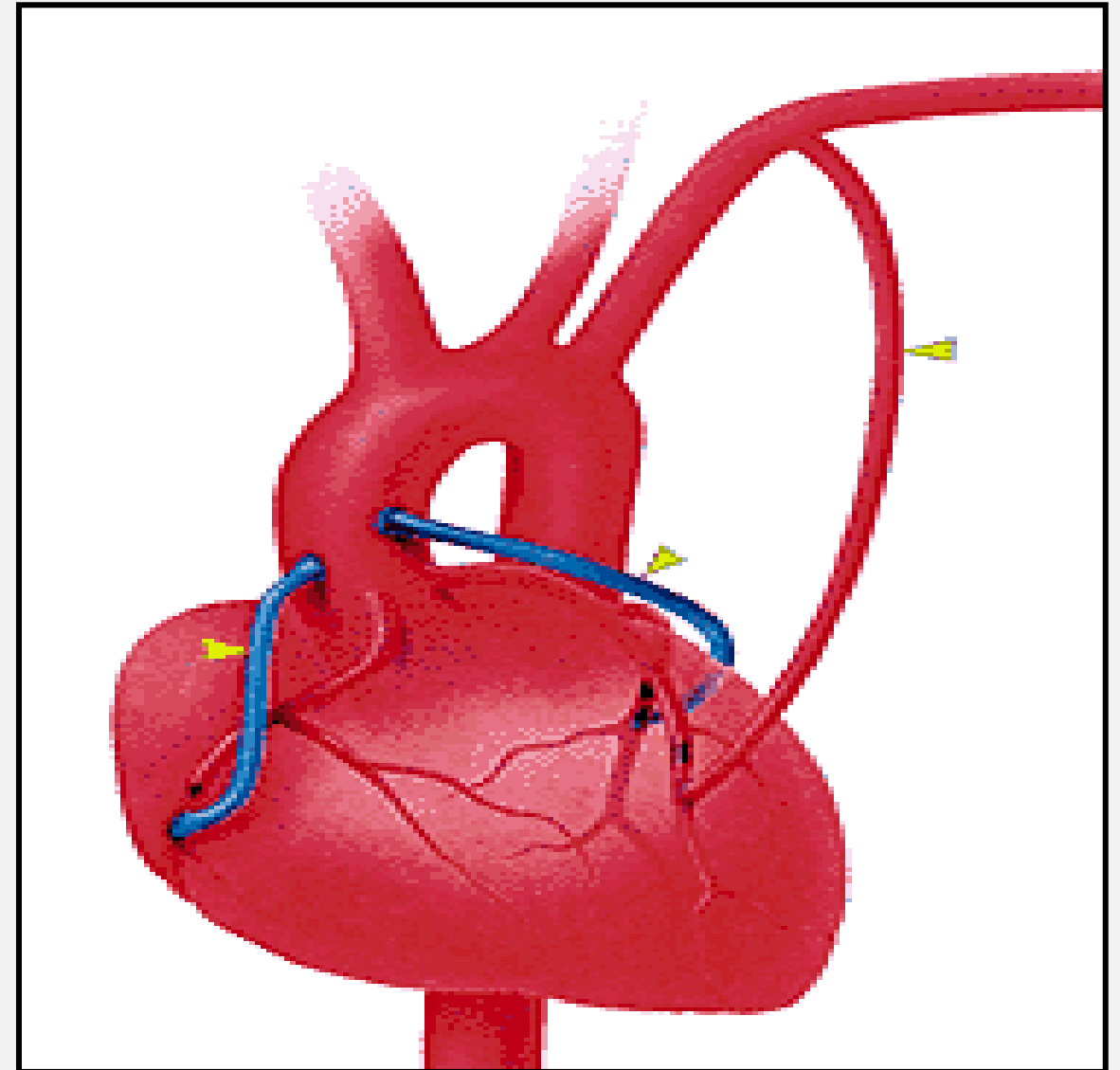
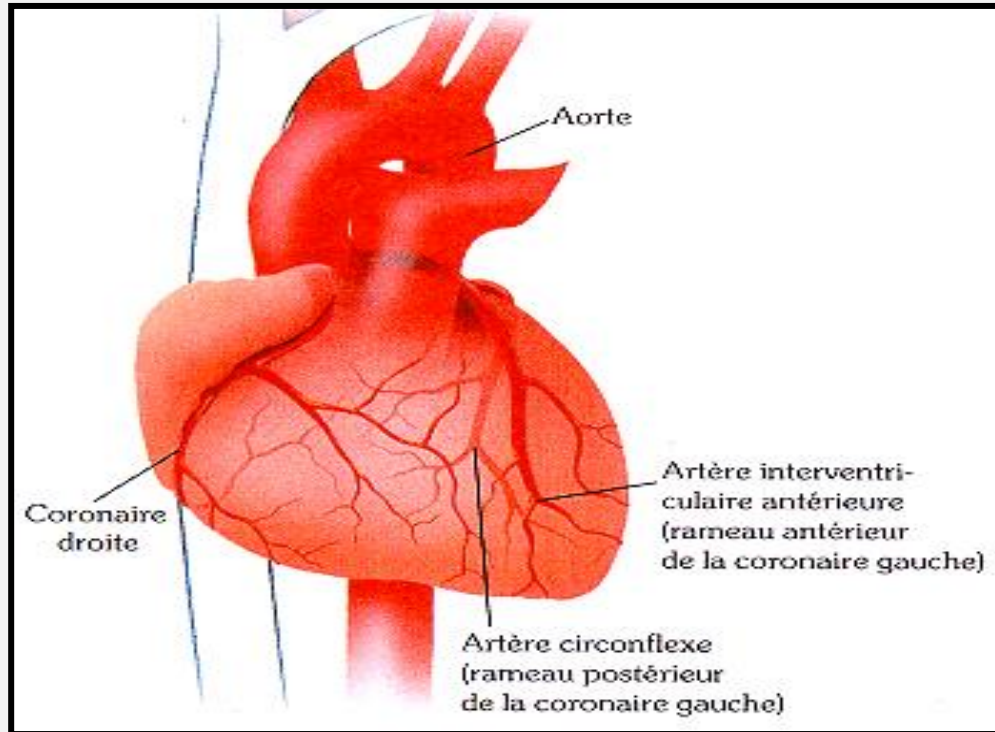
# Plaques d'athérosclérose

Coronarographie



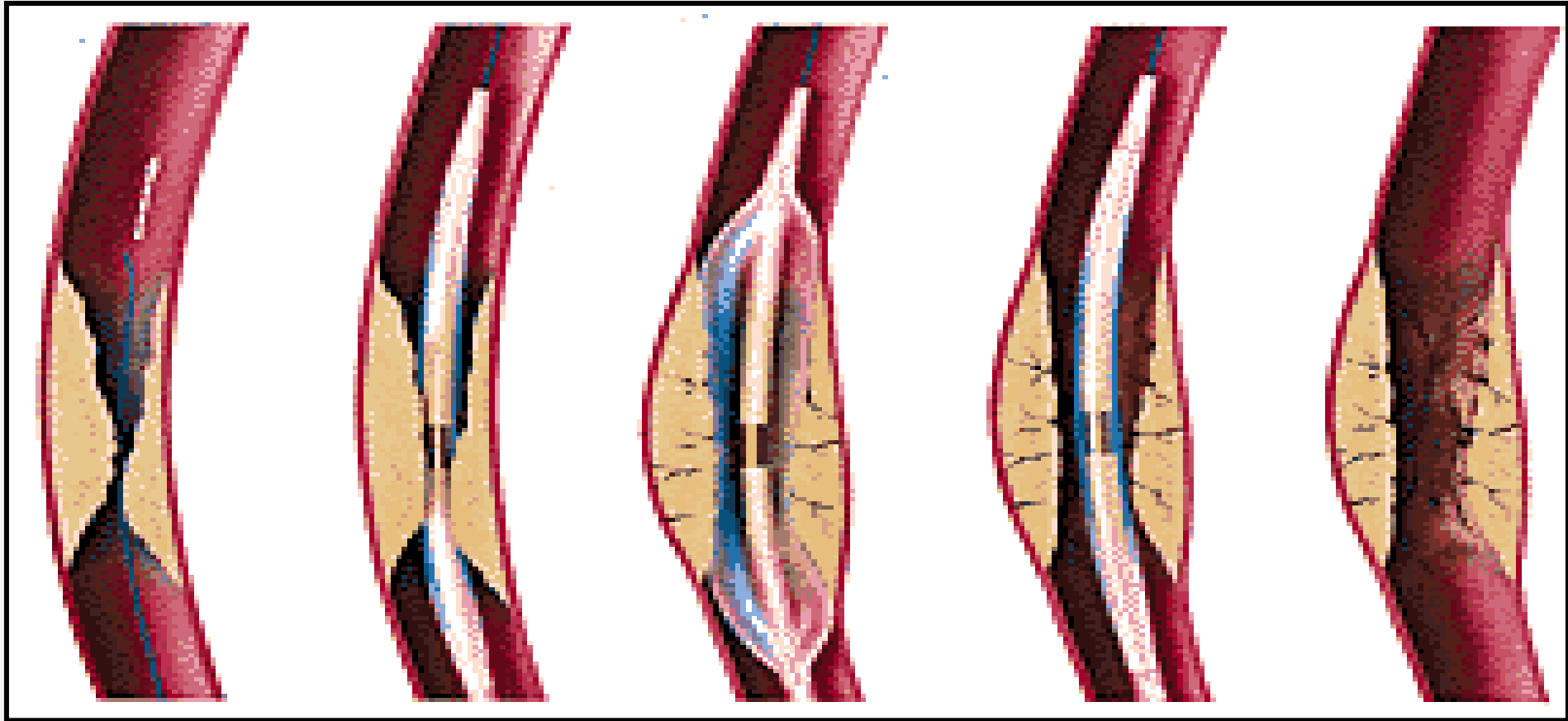
# Traitement invasif de l'athérosclérose

## Pontage coronarien chirurgical



# Traitement invasif de l'athérosclérose

## Angioplastie coronaire



# Traitement invasif de l'athérosclérose

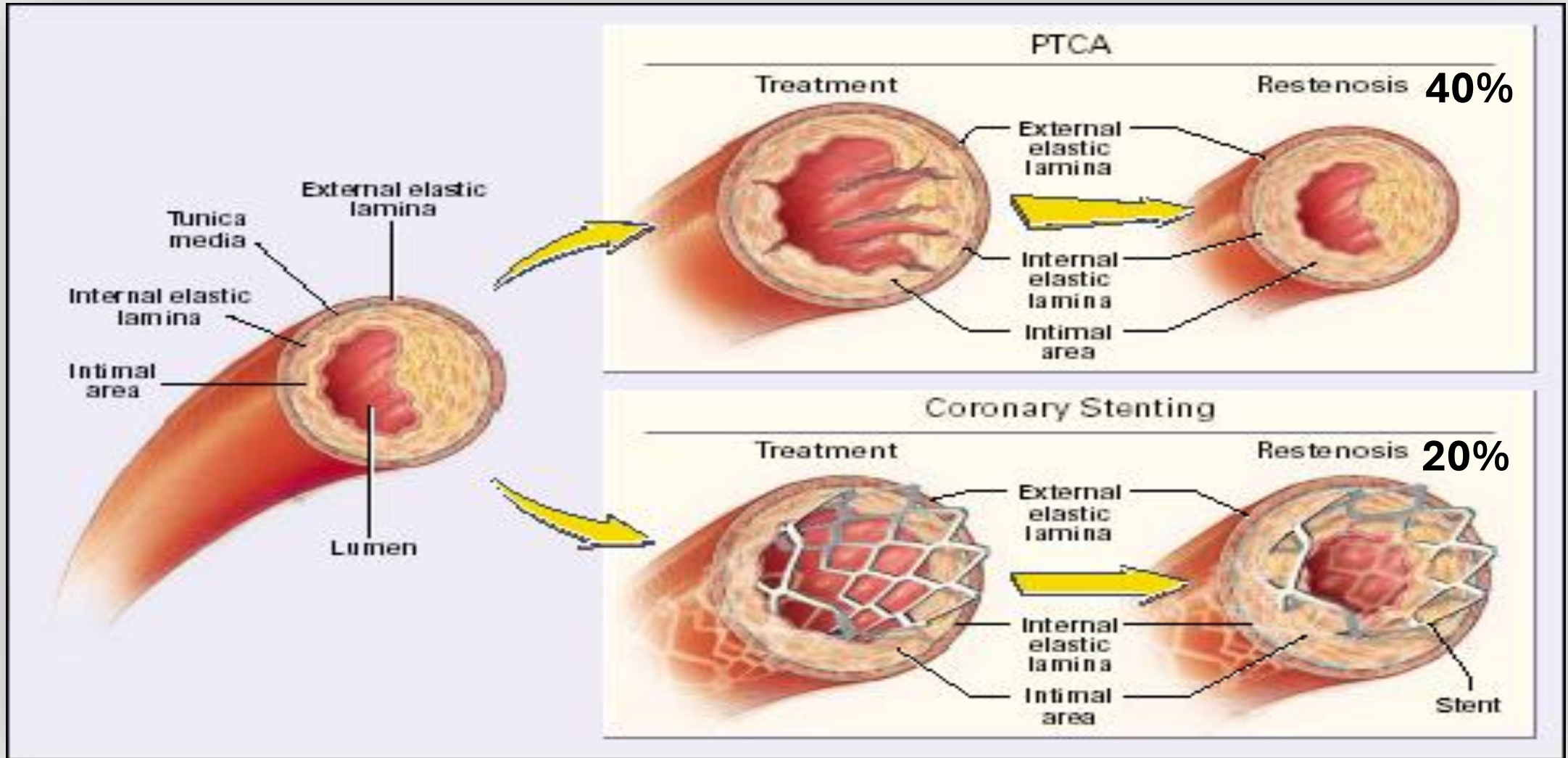
La solution: un support structural



# Traitement invasif de l'athérosclérose

Angioplastie coronaire

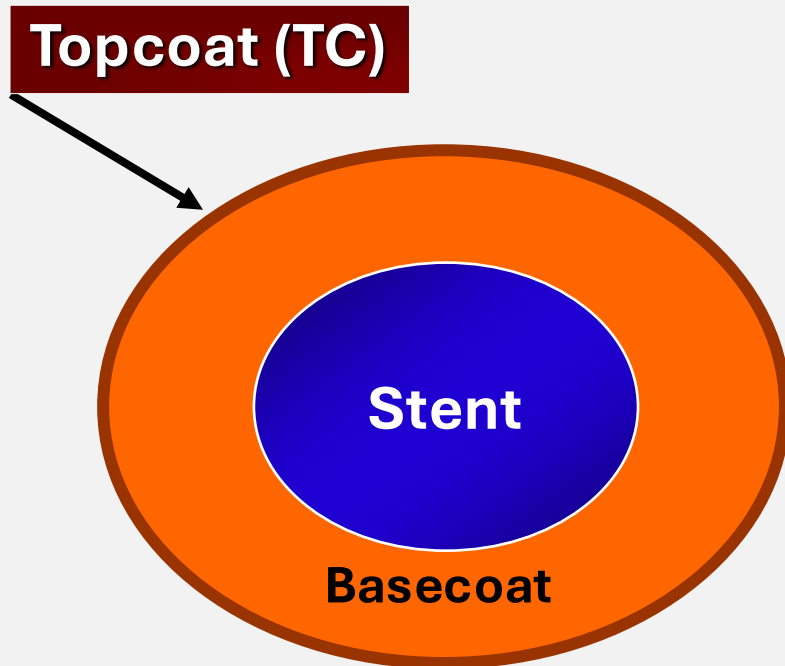
7-8.0x10<sup>6</sup>/year/worldwide



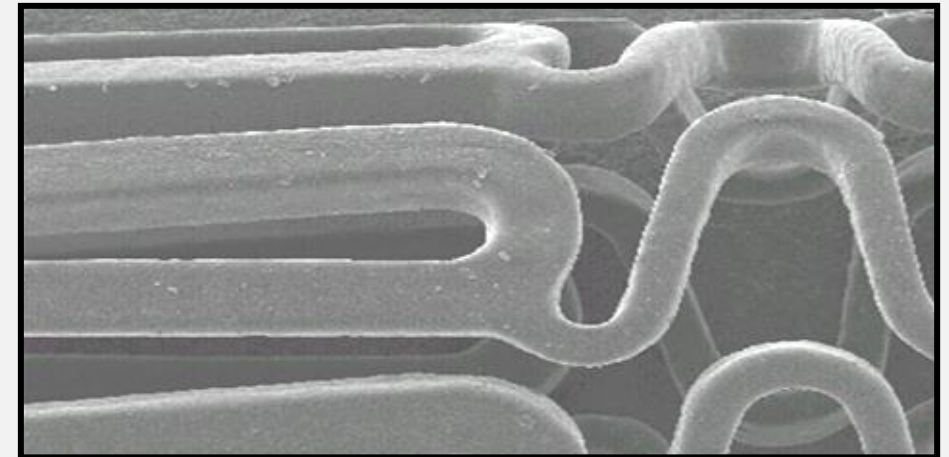
# Traitement invasif de l'athérosclérose

Angioplastie coronaire avec drug eluting stent

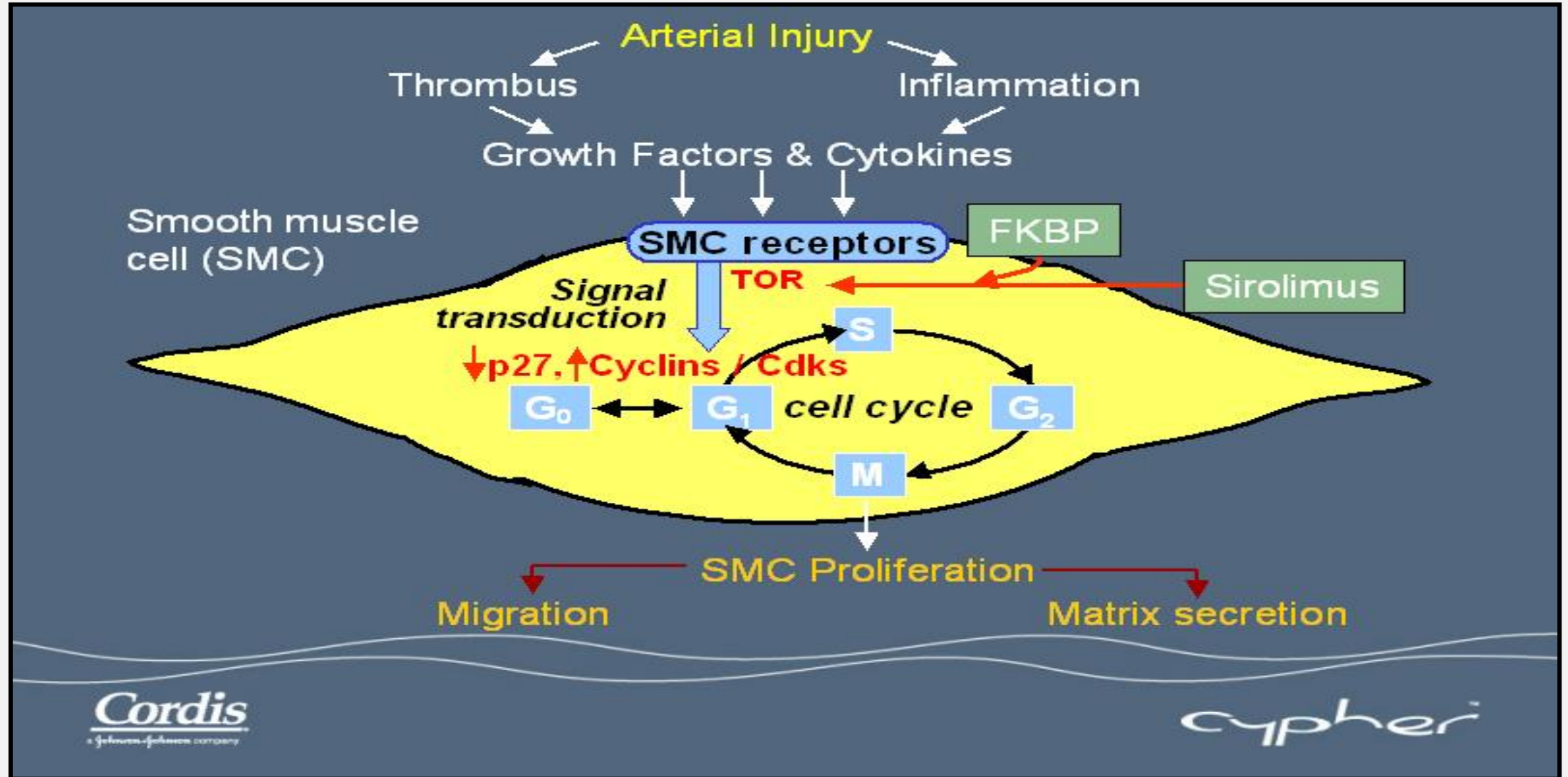
Sirolimus Time Activated Release  
Polymer Matrix



- Basecoat = polymer + Sirolimus  
+
- Topcoat = diffusion barrier



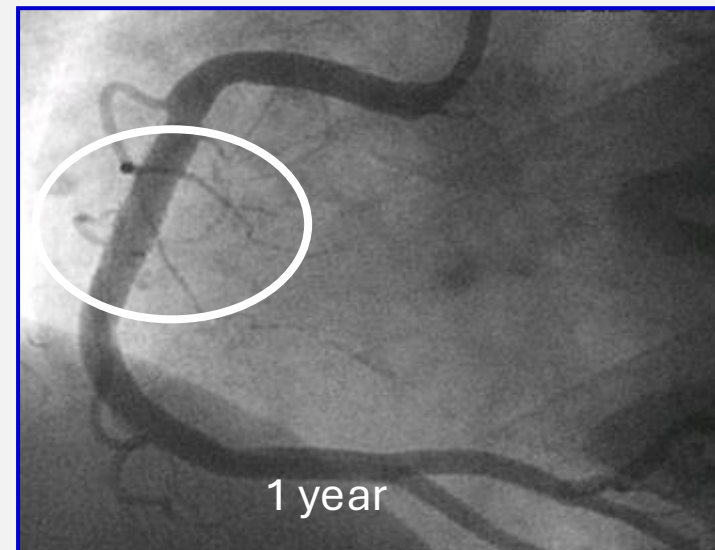
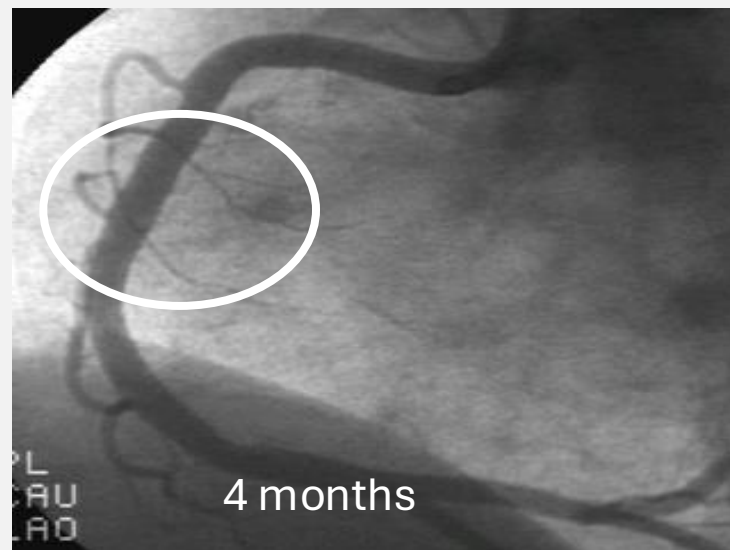
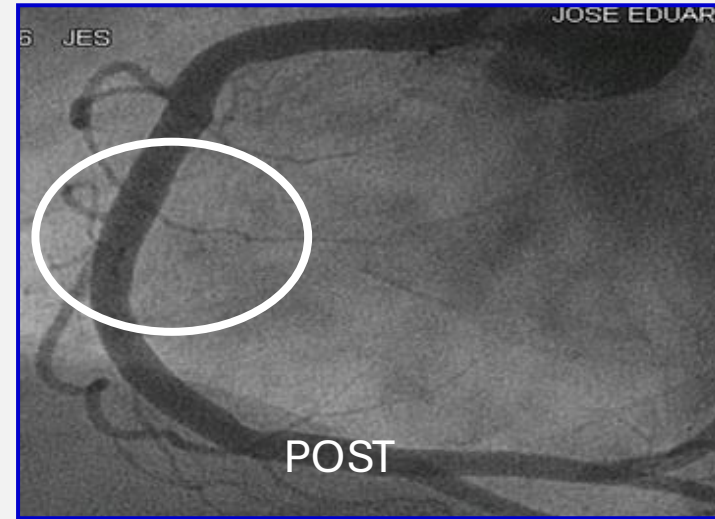
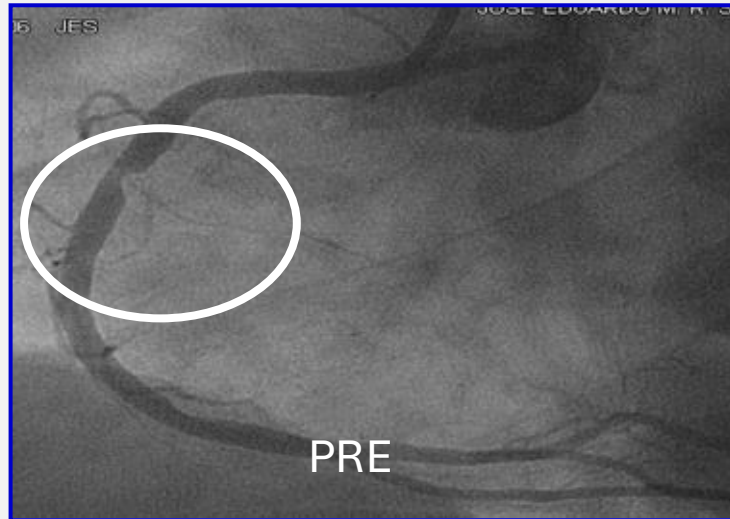
# Mechanism of neointimal formation



# Traitement invasif de l'athérosclérose

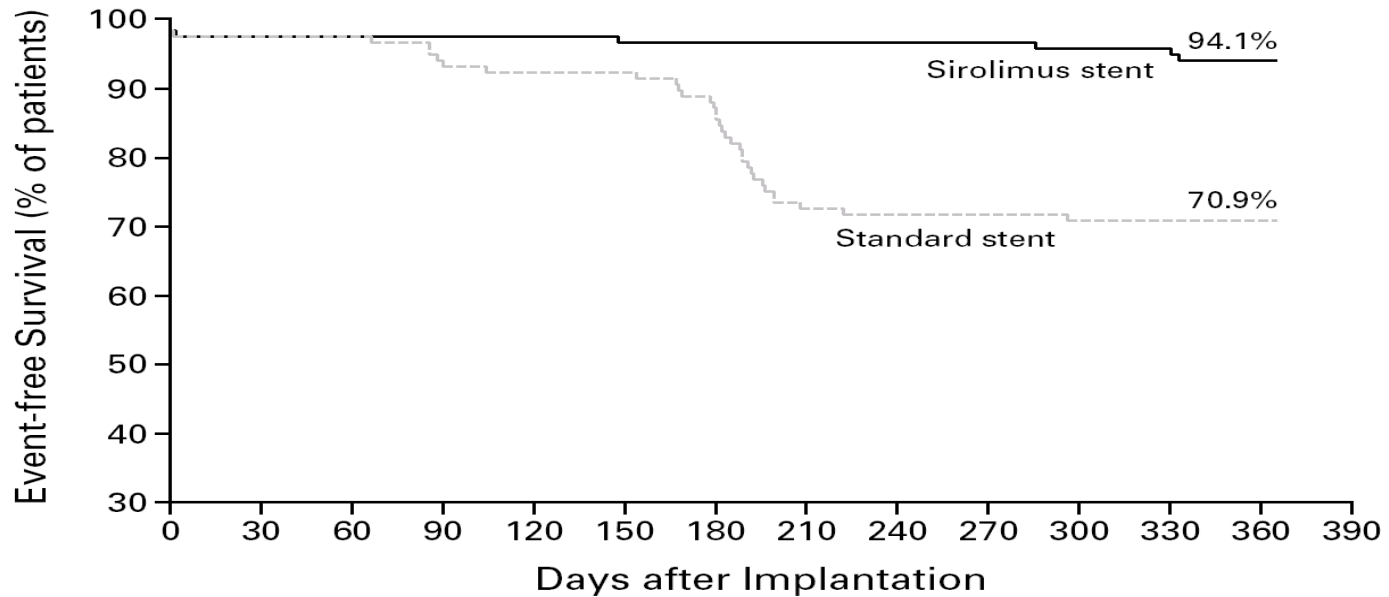
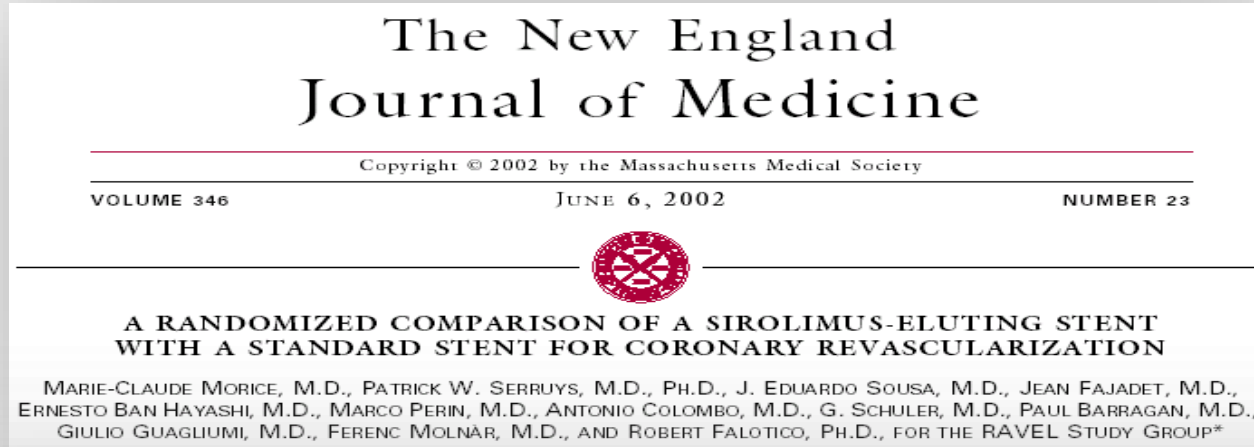
Angioplastie coronaire avec drug eluting stent

1 year follow-up



# Traitement invasif de l'athérosclérose

## Angioplastie coronaire avec drug eluting stent



# Major landmarks of PCI

- 1977 First PCI A. Gruentzig (Zurich)

Can be done - relieves angina

- 1986 First stents U. Sigwart (Lausanne)

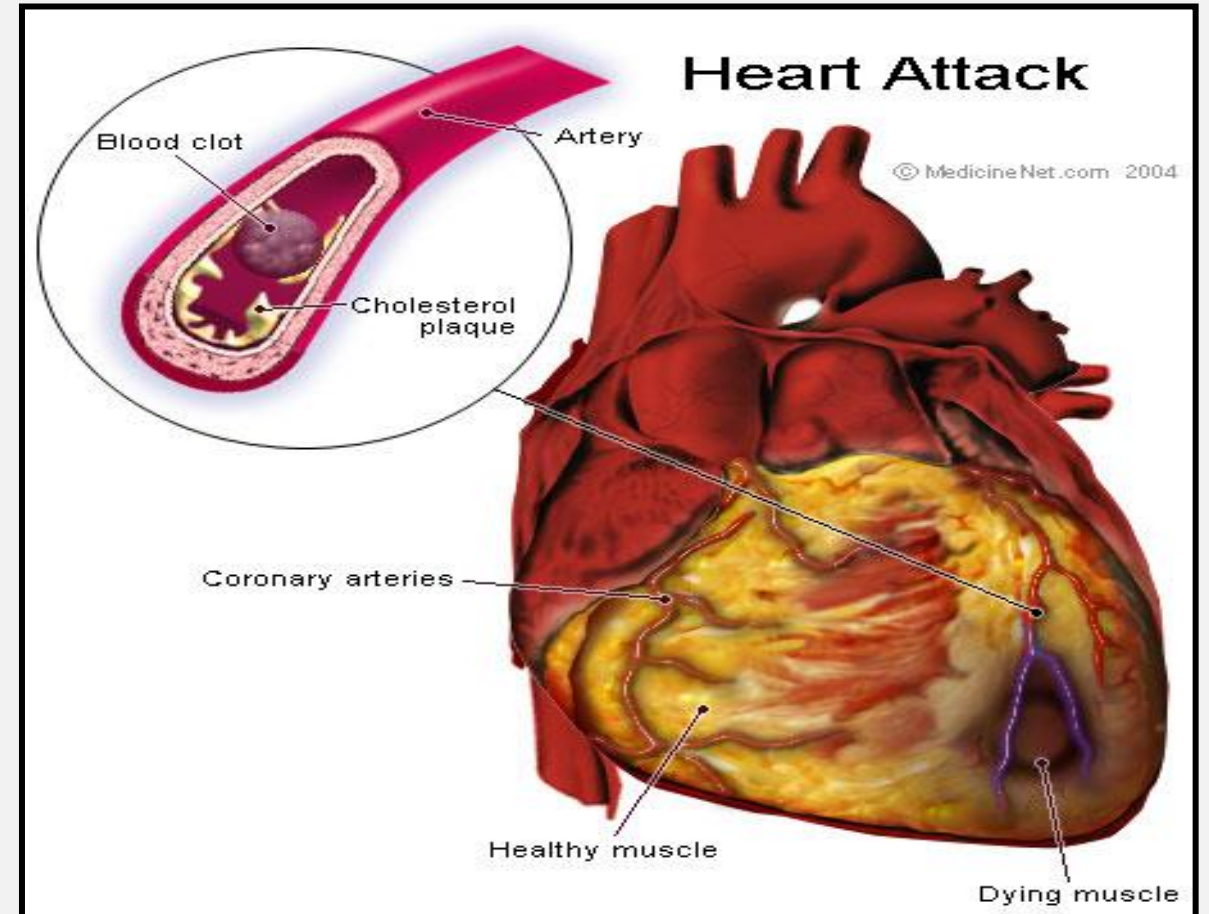
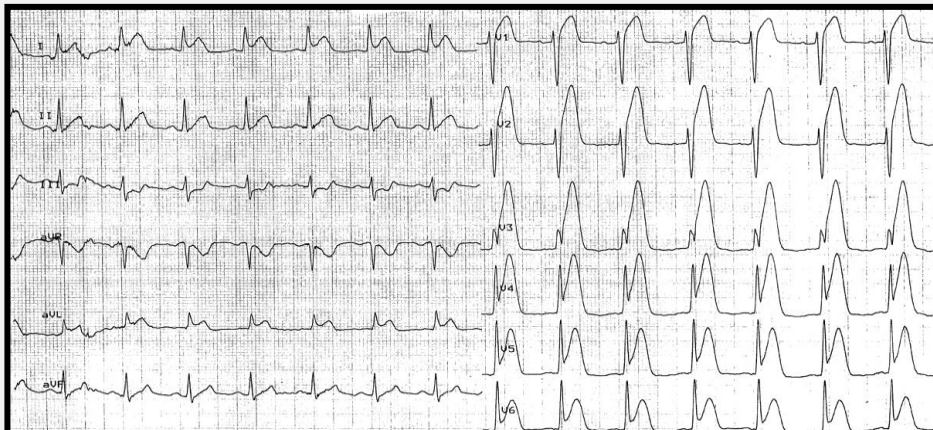
Treatment of abrupt closure decrease of restenosis

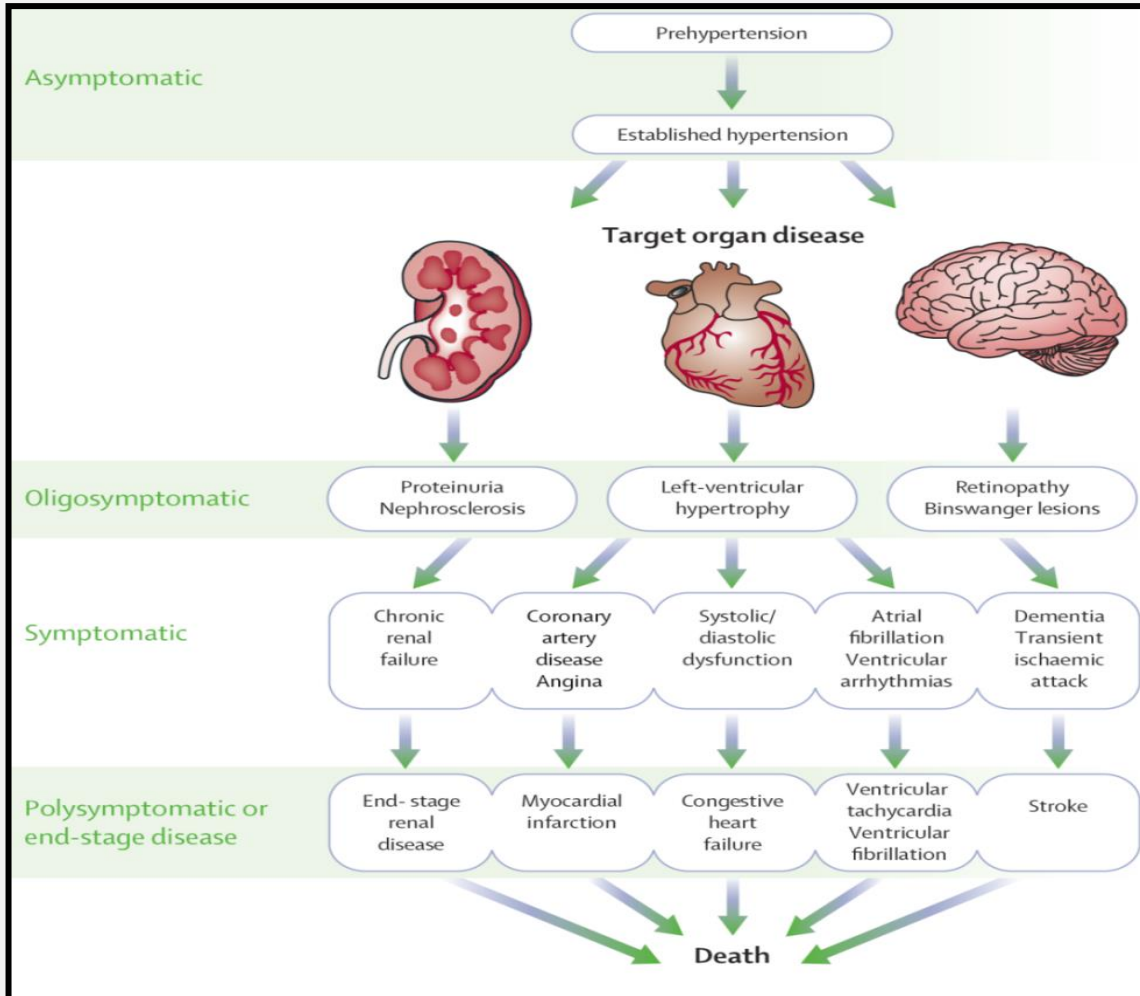
- 2000 First DES trial M-C. Morice (Paris)

Marked decrease in restenosis

# Athérosclérose

## Infarctus aigu du myocarde









**L'hypertension artérielle est très mal diagnostiquée, ce qui engendre un très grand nombre d'événements cardiovasculaires.**

**Une diminution de quelques mmHg (thérapies efficaces existent) a déjà un large impact sur la morbi-mortalité cardiovasculaire.**

**Une fréquence cardiaque trop élevée est un risque CV**

**Ralentir la fréquence cardiaque**

-  **La consommation en O<sub>2</sub>**
-  **Le stress hémodynamique**
-  **Améliorer le remplissage**
-  **Favoriser la perfusion du myocarde**



**Le traitement invasif des plaques d'athérosclérose implique soit la chirurgie cardiaque (pontage) soit l'angioplastie coronaire**

