

**STEMI. 30-day mortality.  
Cause of death in relation to age.  
Therapeutic consequences.**

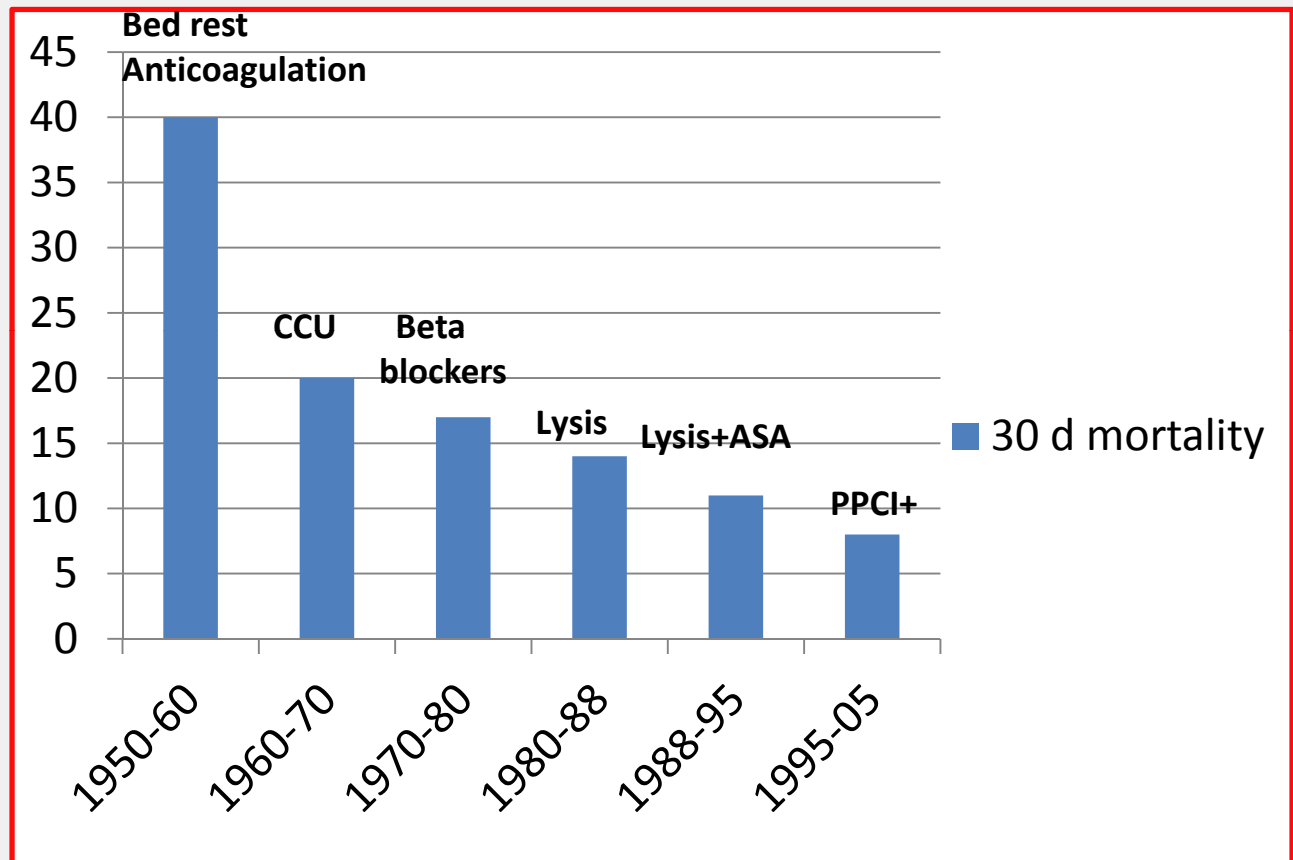
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University of Copenhagen, Denmark**

**Co-workers:**

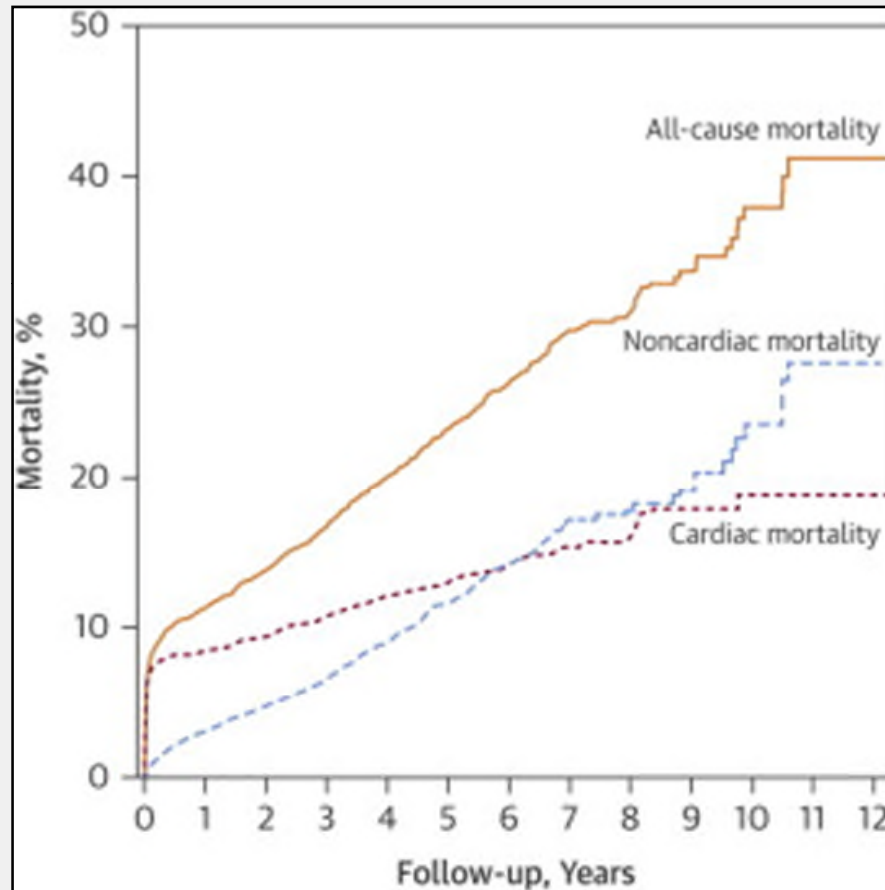
**Engstrøm T      Kelbaek H  
Helqvist S      Holmvang L  
Jørgensen E      Pedersen F  
Clemmensen P**

## Treatment of STEMI. History.



## Short- and Long-Term Cause of Death in Patients Treated With Primary PCI for STEMI.

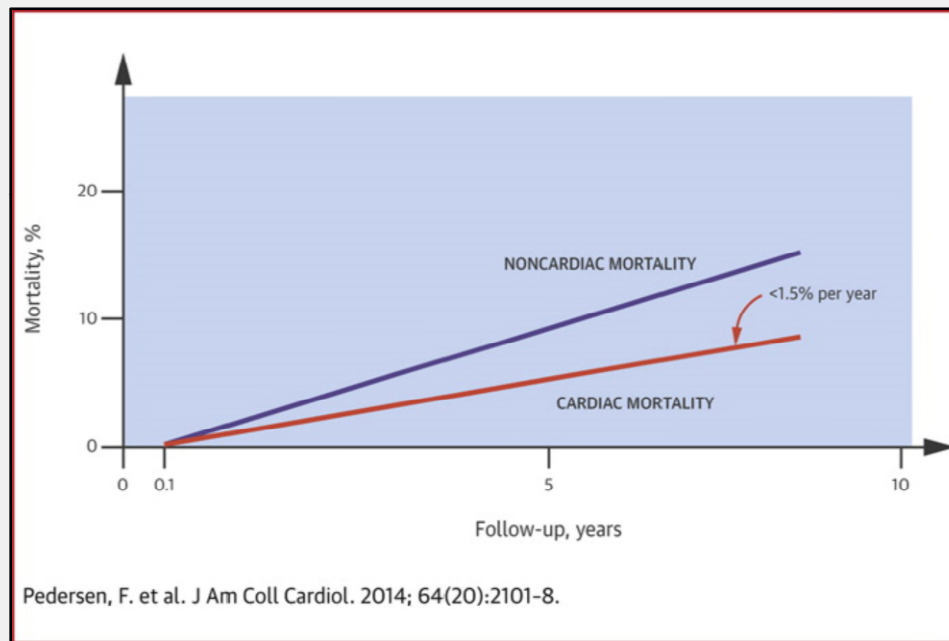
Pedersen F, Butrymovich V, Kelbæk H, Wachtell K, Helqvist S, Kastrup J, Holmvang L, Clemmensen P, Engstrøm T, Grande P, Saunamäki K, Jørgensen E.



J Am Coll Cardiol. 2014 Nov 18;64(20):2101-8.



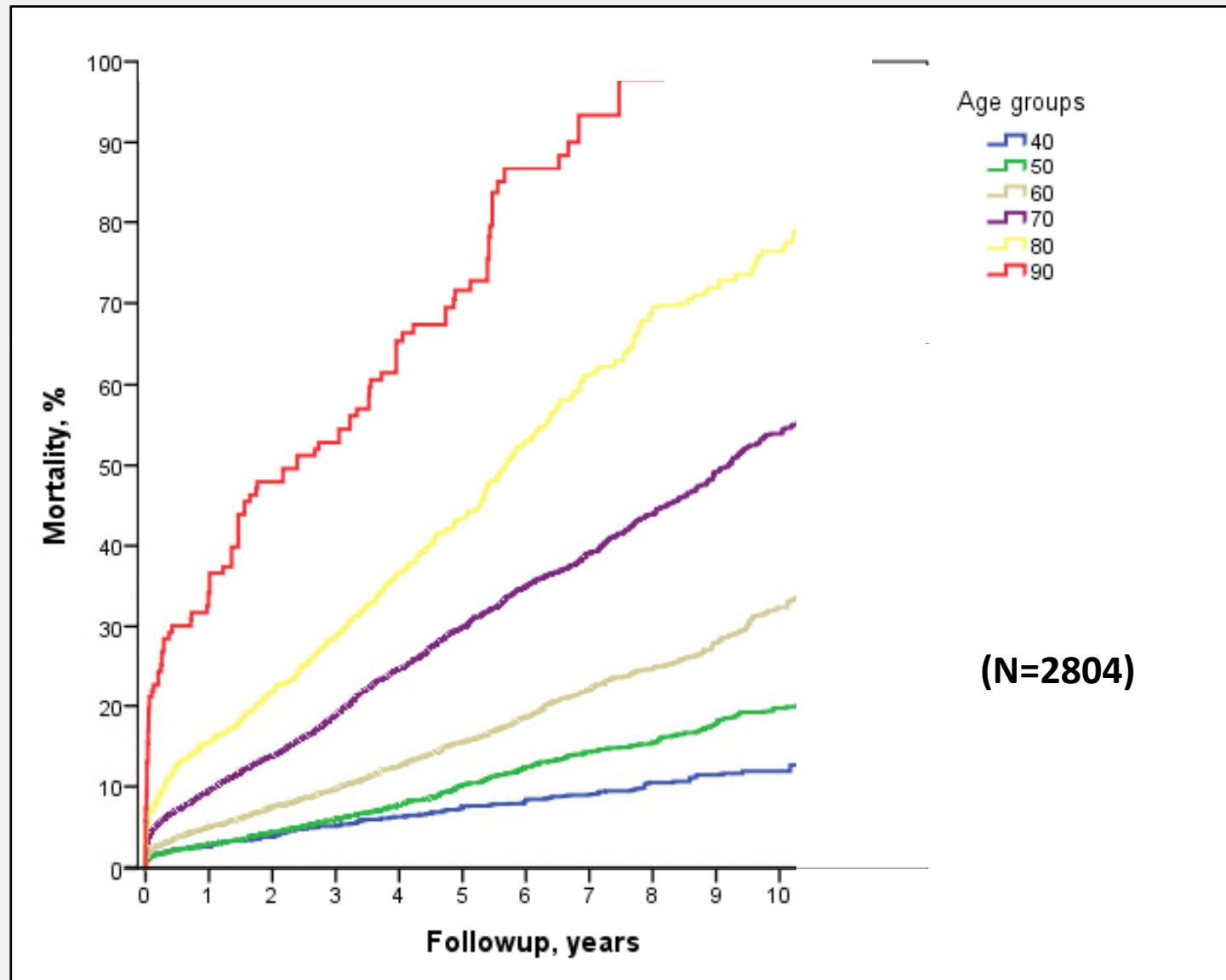
Short- and Long-Term Cause of Death in Patients Treated With Primary PCI for STEMI



Cardiac and Noncardiac Mortality From 30 Days Onward After Treatment With Primary PCI in Patients With STEMI

PCI = percutaneous coronary intervention; STEMI = ST-segment elevation myocardial infarction.

# Mortality After PPCI for STEMI: Importance of Age



## STEMI. Prognostic grouping.

(N= 4615) (2011-15)

### 1. Very High Risk:

**OHCA** (before ambulance arrival) (6%)

**Cardiogenic Shock** (at arrival ) (3%)

### 2. Low Risk

**No OHCA or Cardiogenic Shock** (91%)

		<b>STEMI</b> (2011-2015)	
	<b>N</b>	<b>30-day mortality (%)</b>	<b>No.of deaths</b>
<b>Shock or OHCA</b>	<b>420</b>	<b>41.0</b>	<b>(172)</b>
<b>Remaining</b>	<b>4159</b>	<b>2.8</b>	<b>(115)</b>

		<b>STEMI</b> (2011-2015)	
	<b>N</b>	<b>30-day mortality (%)</b>	<b>No.of deaths</b>
<b>Shock</b>	<b>140</b>	<b>50.0</b>	<b>(70)</b>
<b>OHCA</b>	<b>280</b>	<b>36.4</b>	<b>(102)</b>
<b>Remaining</b>	<b>4159</b>	<b>2.8</b>	<b>(115)</b>



	<b>STEMI (2011-2015)</b>	<b>N = 4615</b>
	<b>30 day mortality (%)</b>	
<b>Age</b>	<b>&lt;=69 (N = 3416)</b>	<b>&gt;=70 (N = 1199)</b>
<b>Shock</b>	<b>41.6</b>	<b>59.8</b>
<b>OHCA</b>	<b>29.5</b>	<b>56.2</b>
<b>Remaining</b>	<b>1.0</b>	<b>7.94</b>

STEMI no initial OHCA/SHOCK (N = 4159)  
30-day mortality (2.8 %).

**Causes of 30-day death (N= 115/4195)**

- |                                       |                |
|---------------------------------------|----------------|
| <b>1. Progressive heart failure</b>   | <b>(53.9%)</b> |
| <b>2. Refractory cardiac arrest</b>   | <b>(24.4%)</b> |
| <b>3. Post-discharge sudden death</b> | <b>(11.3%)</b> |
| <b>4. Miscellaneous</b>               | <b>(10.4%)</b> |

STEMI no initial OHCA/SHOCK (N = 4159)  
30-day mortality (2.8 %).

### **Complicated heart failure (N=37/62)**

- **Emergency surgery (CABG, Valve)**
- **Sepsis, endocarditis**
- **Non-cardiac surgery**
- **Stroke**
- **Malignancy**
- **Intestinal ischemia/gangrene**

**STEMI no initial OHCA/SHOCK (N = 4159)**  
**30-day mortality (2.8 %).**

**Miscellaneous causes of death (N=12)**

- **Myocardial rupture (6)**
- **Aortic dissection (4)**
- **Intracranial haemorrhage**
- **Procedure induced shock**

<b>Causes of death</b>	<b>STEMI (N =4195) (No OHCA or shock)</b>	
<b>Age</b>	<b>&lt;=69</b>	<b>&gt;=70</b>
<b>Progressive Heart failure</b>	<b>15 (25.7%)</b>	<b>47 (55.9%)</b>
<b>Refr. Cardiac arrest</b>	<b>4 (14.4%)</b>	<b>24 (28.8%)</b>
<b>Post-discharge SD</b>	<b>6 (16.4%)</b>	<b>7 (8.3%)</b>
<b>Miscellaneous</b>	<b>6 (16.4%)</b>	<b>6 (7.1%)</b>
<b>Total no.</b>	<b>31</b>	<b>84</b>

# STEMI

## VERY HIGH RISK

OHCA  
SHOCK at arrival

## LOW RISK

REMAINING 90%

**Very high risk vs. Intermediate risk  
Vs. Very Low Risk**

**Very high risk**

**Shock og OHCA**

**No Shock or OHCA:**

**Intermediate risk; one of the following:**

**LVEF < 40%**

**Diabetes**

**Incomplete revascularisazion**

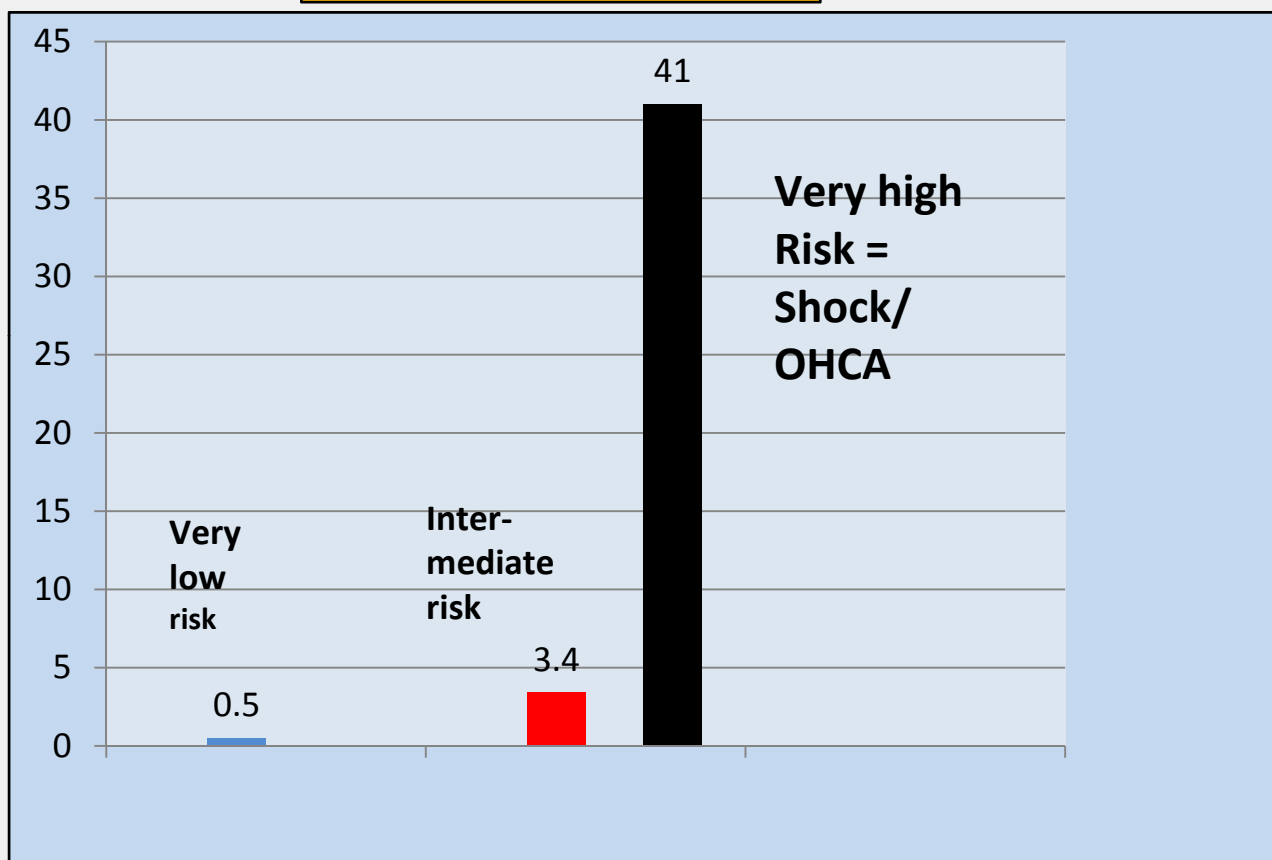
**Age =>80 years**

**Very Low Risk:**

**Absence of above**

**Very Low Risk vs.  
Intermediate Risk vs.  
Shock/OHCA**

**30-day  
Mortality  
(%)**





## CONCLUSIONS (1):

### SHOCK/OHCA (10%)

- Very high risk
- Dominant cause of death in STEMI
- Most frequent in the elderly

### REMAINING 90%

- Very low risk
- Main cause of death:  
Heart failure and refractory cardiac arrest in the elderly
- Post-discharge sudden death very rare

## **CONCLUSIONS (2):**

### **SHOCK/OHCA (10%)**

- **Public education in CPR**
- **Improved ambulance service**
- **New prehospital strategies for myocardial / cerebral protection**
- **Prehospital heart failure treatment**
- **Early circulatory support**

### **REMAINING 90%**

- **New methods for early identification of a subgroup with increased risk**
- **Early myocardial protection and heart failure treatment**
- **Aim at full revascularization**

THE END



*At*  
WARNER BROS.  
FIRST NATIONAL PICTURES

**STEMI no initial OHCA/SHOCK (N = 4159)**

**30-day mortality (2.8 %).**

**Death from  
progressive heart failure**

**<=69 y N = 15/3137 (0.48 %)**

**>=70 y N = 47/1058 (4.44%)**

**P < 0.00001**