Registry and benchmarking as tool for Quality assessment in STEMI patients

Belgian Interdisciplinary Working Group on Acute Cardiology (BIWAC)

College of Cardiology

April 2007

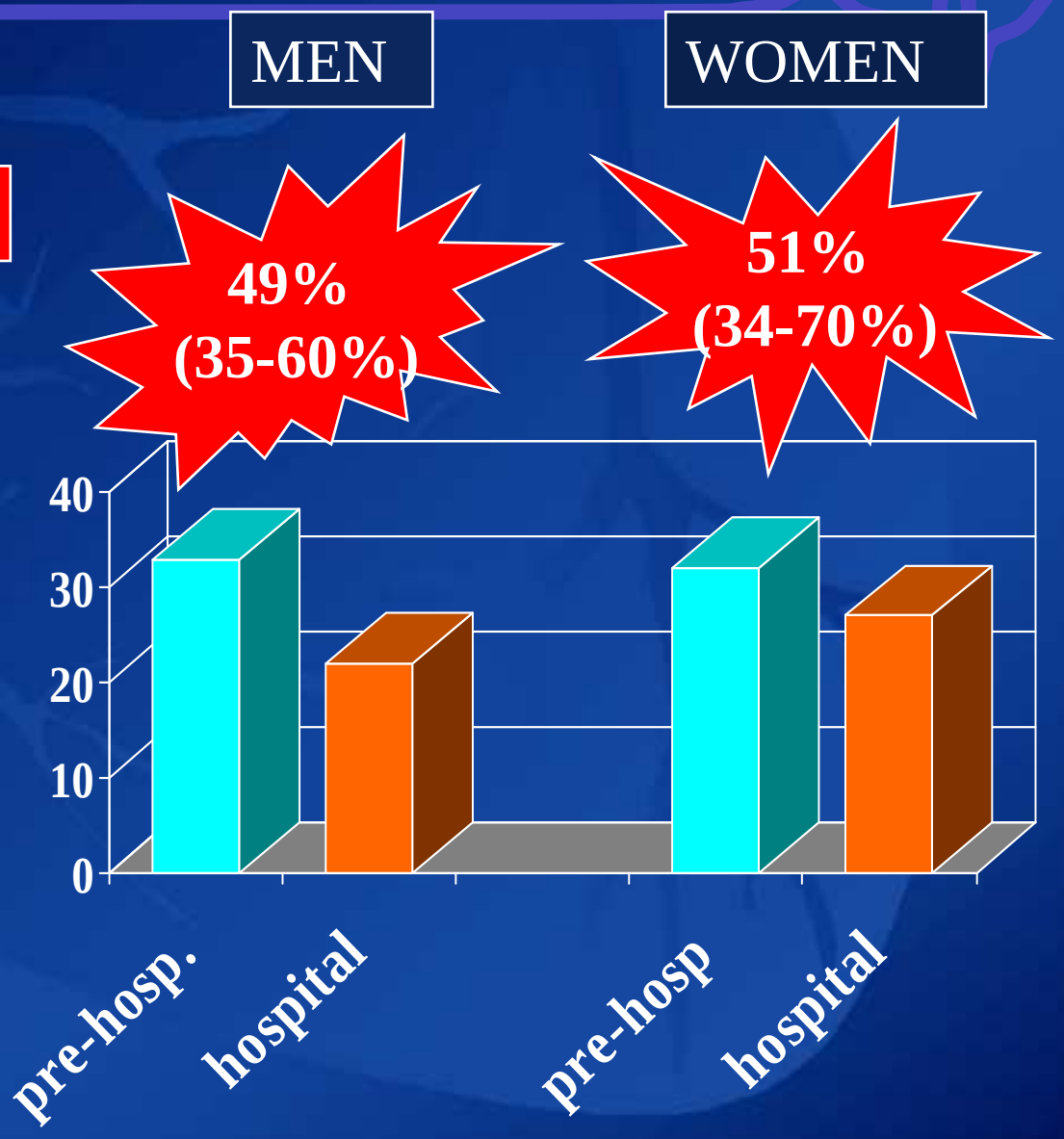
- **Background**
- Reperfusion strategy STEMI
- STEMI registration in Belgium
- Electronic CRF
- Analysis and report
- Practical organisation

AMI - Prognosis

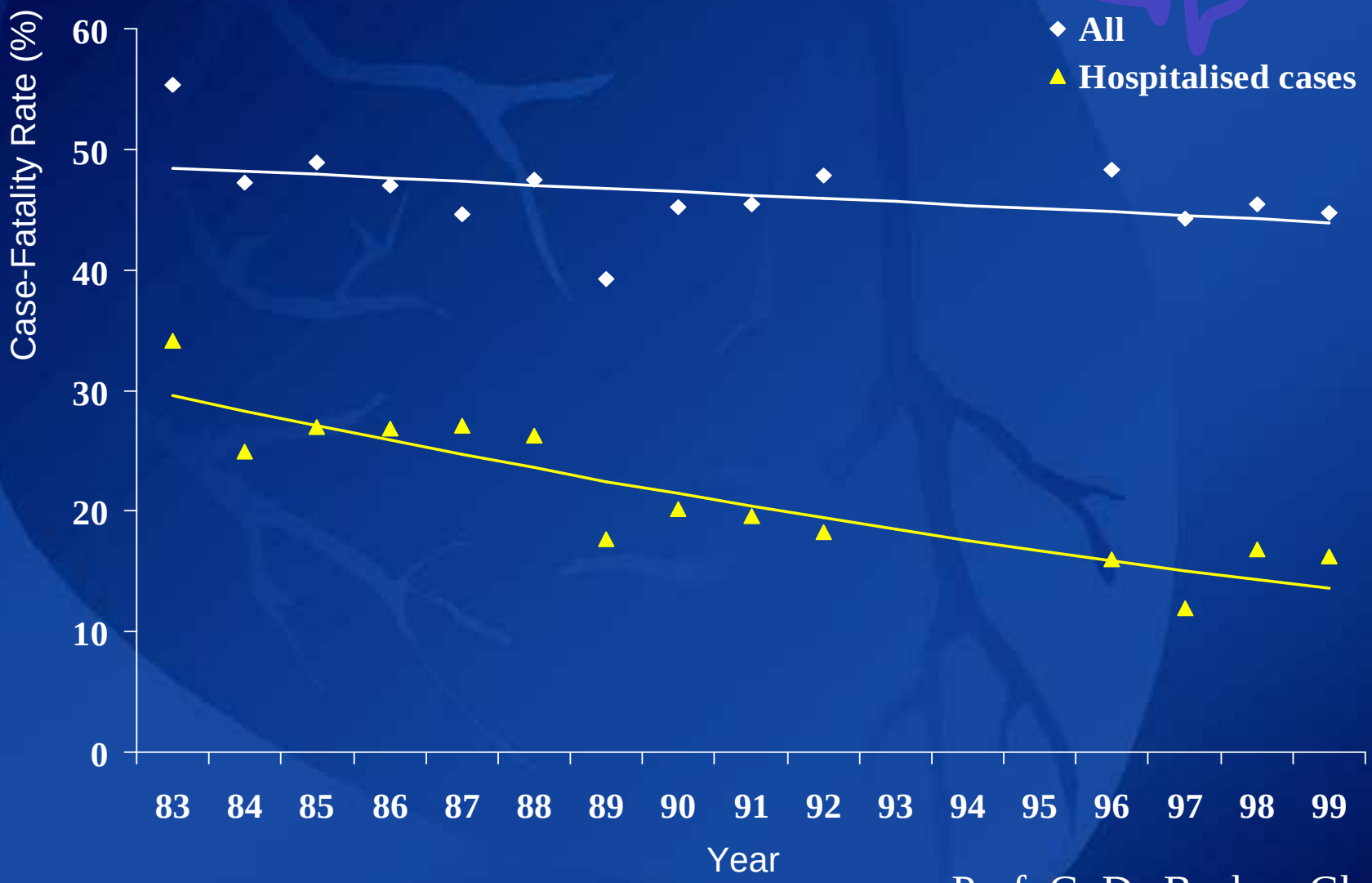
28 d. Case Fatality

WHO-MONICA

1985-1990

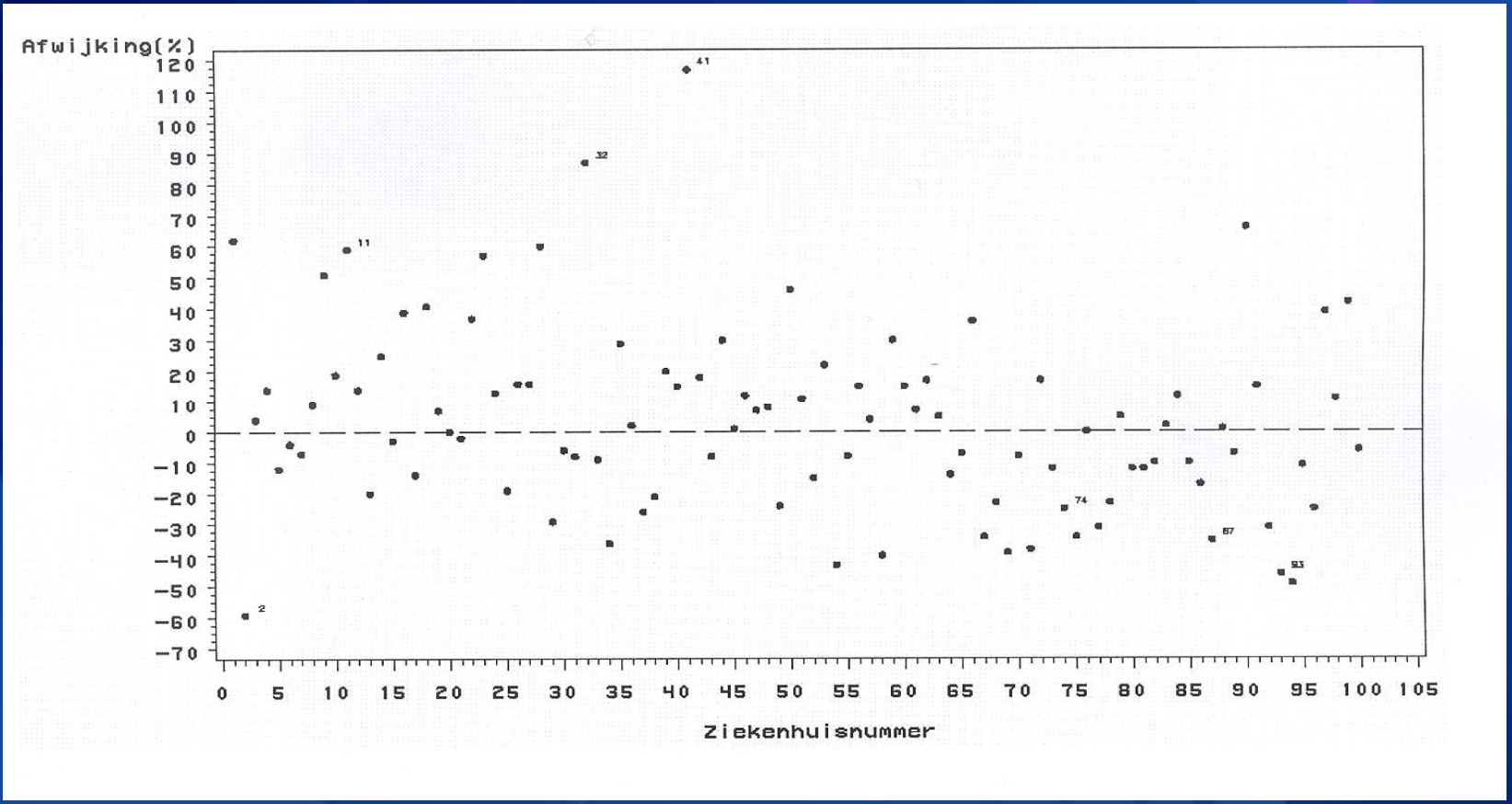


Case-Fatality in Ghent in men 25-69 years



Prof. G. De Backer, Ghent

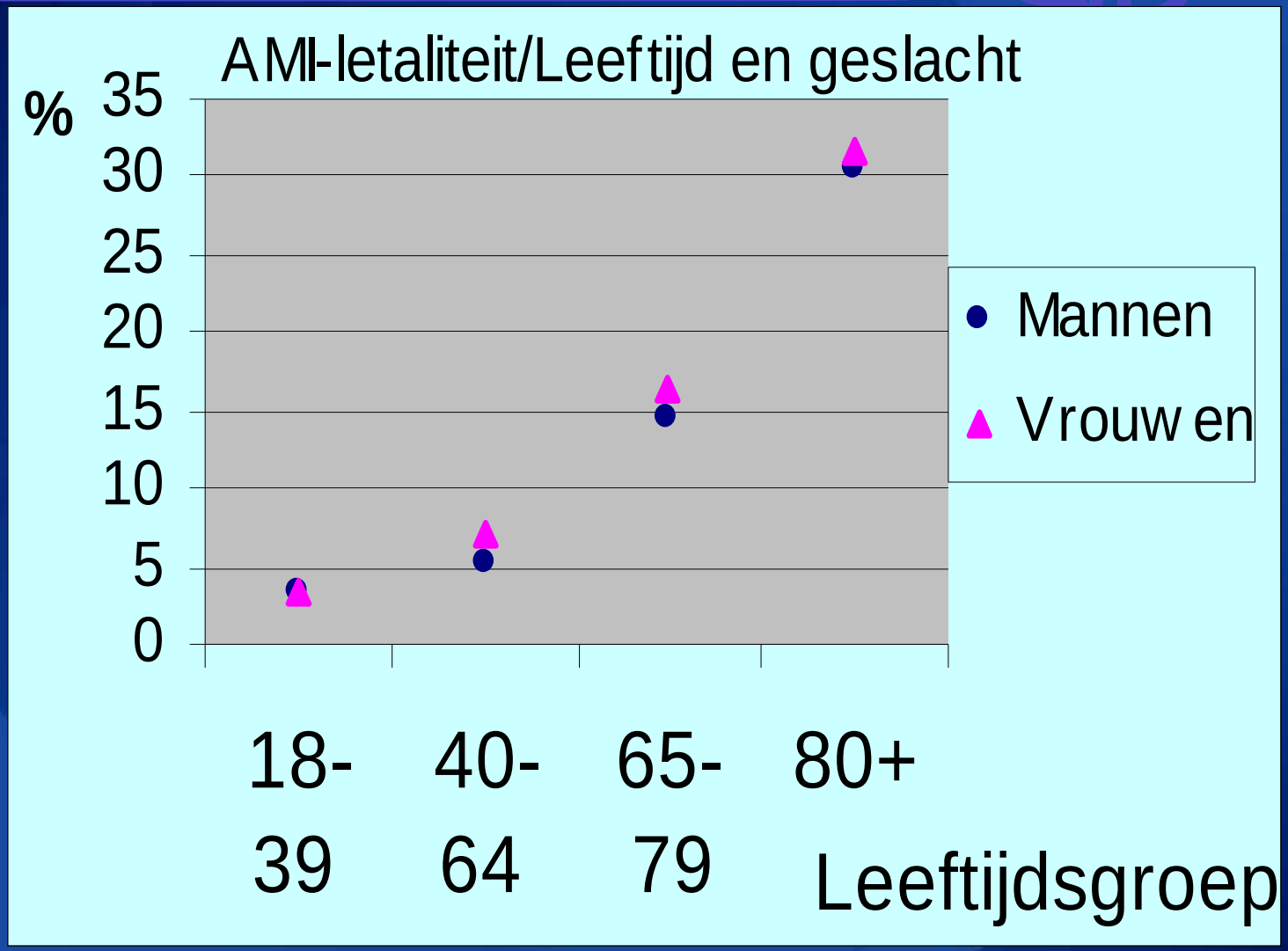
Lethality of AMI 2000-2003: MKG data



N= 44782 AMI in hospital lethality: 15.9%

From dr W Aelvoet, RIZIV/ENAMI

Lethality of AMI 2000-2003: MKG data



What are the reasons of variation in lethality?

- Different patient risk profile ?
  - Shock – age - ischemic time
  - Correction with TIMI risk score
- Different reperfusion modalities?
  trombolysis vs PCI vs no reperfusion

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European Heart Journal (2005) 26, 2733–2741
doi:10.1093/eurheartj/ehi673

ESC Report

Implementation of reperfusion therapy in acute myocardial infarction. A policy statement from the European Society of Cardiology

Jean-Pierre Bassand[1*], Sigmund Silber[3], Marco

[1] *Members of the Board of th*
Care; and [3] *Representatives o*

Received 2 November 2005; accepted

BELGIAN SOCIETY OF CARDIOLOGY
Working Groups of Acute and Invasive Cardiology
Under Auspices of the European Society of Cardiology

Policy Conference :

IMPLEMENTATION OF REPERFUSION THERAPY IN STEMI PATIENTS

SATURDAY
SEPTEMBER 30TH 2006
Start: **9:00** End: **13:00**

Optimalisation of reperfusion therapy (ESC report)

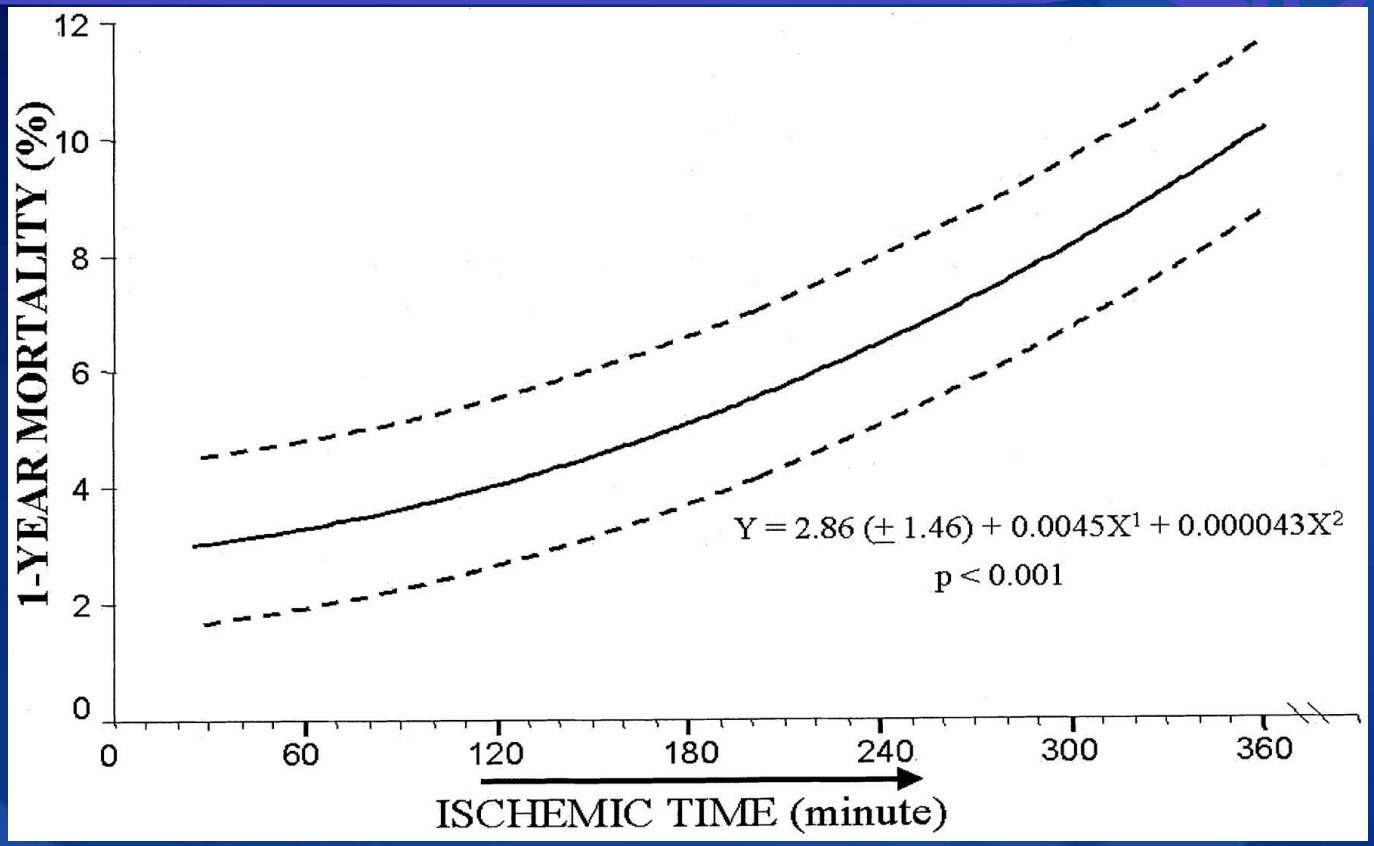
1. Reperfusion therapy (thrombolysis – PCI) in STEMI favourably influences short and long term patient outcome

2. Up to 40% of all STEMI patients do not receive reperfusion therapy in Europe (ESC-ACS registry 2001). (Belgian data?)

3. Optimalisation of reperfusion therapy can be achieved by organising conference meetings, providing guidelines and setting up registries.

4. Importance of networks of reperfusion (including transport organisation) to limit time delay between onset of symptoms and initiation of reperfusion therapy.

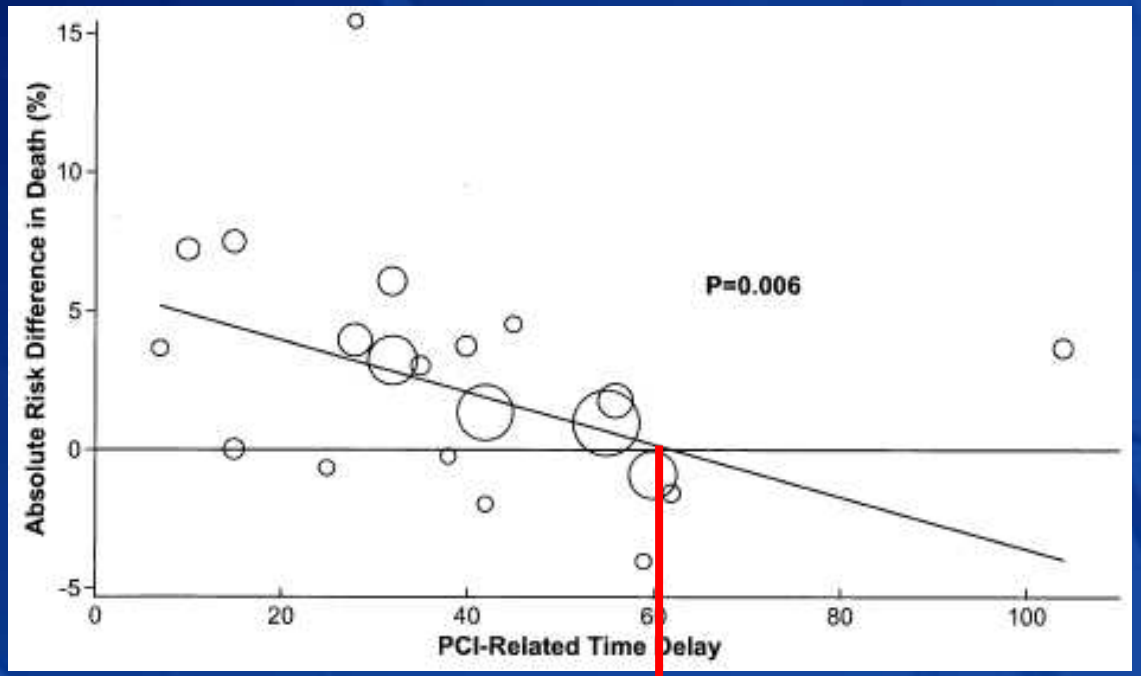
Time issue and reperfusion therapy



30 minutes delay increases 1-year mortality by 7.5%

Meta-analysis primary PCI: De Luca, Circulation 2004

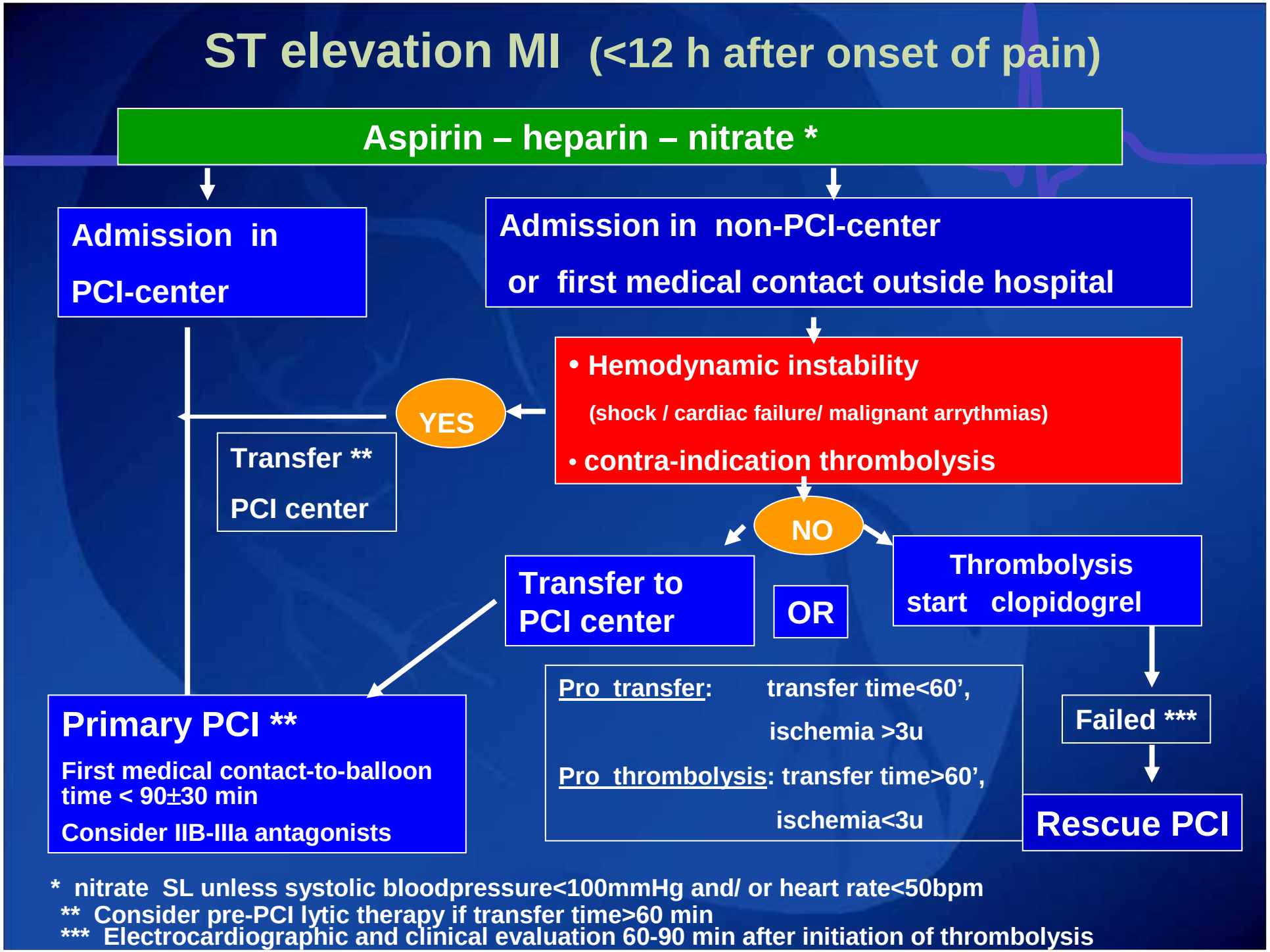
Time issue and reperfusion strategy



If PCI-related time delay >60 min,

the benefit of PCI over thrombolyis vanishes

ST elevation MI (<12 h after onset of pain)



* nitrate SL unless systolic bloodpressure<100mmHg and/ or heart rate<50bpm

** Consider pre-PCI lytic therapy if transfer time>60 min

*** Electrocardiographic and clinical evaluation 60-90 min after initiation of thrombolysis

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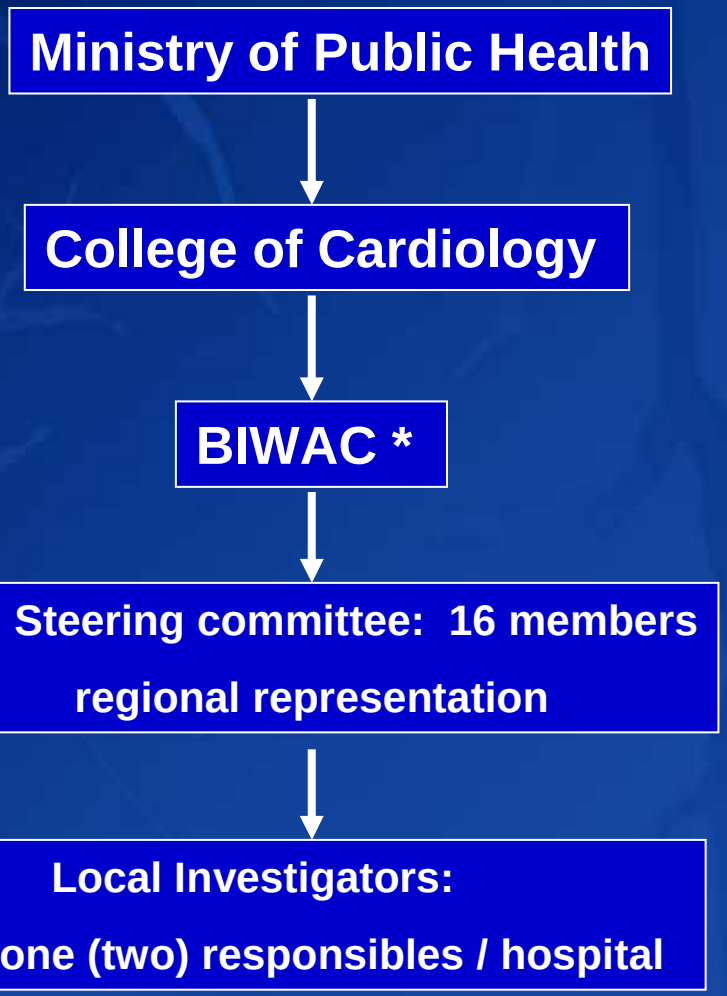
STEMI registry in Belgium: AIM

- Prospective registry of all ST elevation myocardial infarctions admitted in Belgian hospitals (critical care program A)
- Quality assessment of critical care by means of on-line reports allowing benchmarking.
- Evaluation of predictors of in hospital mortality for STEMI in Belgium

STEMI registry : Organisation



•Belgian Interdisciplinary working group of acute cardiology

STEMI registry : Steering committee

- **Antwerpen**: M Claeys – S Hellemans - C Convens
- **Oost-Vlaanderen**: H De Raedt - S Gevaert
- **West – Vlaanderen:** P Coussement – K Dujardin
- **Limburg:** P Vranckx - J Dens
- **Vlaams Brabant:** P Sinnaeve -
- **Brussel:** M Renard - B Faoding
- **Hainaut:** P Dubois – A de Meester
- **Liege:** J Boland
- **Namur – Luxembourg:** P Evrard - C Beauloye
  Braband -Wallon

STEMI registry : organisation

- **Q1-2 2006**: Pilot study (one patient/centre)
  evaluation of content of CRF
- **Q3-Q4 2006:** installation of web-based registry
  Independent software company
  Lambda-plus (http://www.lambdaplus.com)
- **Q1 2007**: Application of registry by steering committee members
  enrollment 20/4: n= 300 STEMI patient
- **Q2 2007:** Implementation of registry in all Belgian hospitals
  organisation of regional starting-up meetings
- **Q3 2007:** Interim analysis
- **Q4 2007**: analysis and report 2007

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Minimal Data Base

Patient characteristics (TIMI risk score)

Reperfusion strategy

In Hospital Outcome

Electronic CRF

ST-Verheffing hartinfarct registratie	Crf nummer:
Naam ziekenhuis:	Naam van de verantwoordelijke geneesheer:

Patiëntenkarakteristieken bij opname

Opnamedatum: (dd/mm/yyyy)

De patiënt heeft zijn toestemming aan de gegevens behandeling gegeven: Ja Nee

Geboortedatum: Leeftijd:

Patiënt postcode: Patiënt initialen:

Geslacht: Man Vrouw Gewicht: <67 kg >=67 kg

Cardiovasculaire voorgeschiedenis:

- Ischemisch hartlijden Ja Nee
- Perifeer vaatlijden Ja Nee
- Arteriele hypertensie Ja Nee
- Diabetes mellitus Ja Nee

Killip Klasse: 1 (geen hartfalen) - 2 - 3 - 4 (shock)

Cardio-pulmonale reanimatie: Ja Nee

Bloeddruk: <100 mmHg >=100 mmHg

Hartritme: <100 hartslagen/minuut >=100 hartslagen/minuut

ECG: anterior - non-anterior - linkerbundeltakblok

Reperfusiebehandeling binnen de eerste 24 uur

Totale ischemietijd: <4u / 4-8u / 8-12u / 12-24u
(tijd vanaf begin klachten tot behandeling)

"Door-to-balloon/needle" tijd: <30min / 30-60 min / 60-90 min / 90-120 min / >120min
(tijd vanaf eerste medische contact tot begin reperfusiebehandeling)

Reperfusiebehandeling:

Trombolyse Primaire PCI

Rescue PCI Gefaciliteerde PCI

Geen reperfusiebehandeling

Reden:

Prehospitale trombolyse: Ja Nee

Transport naar PCI centrum: Ja Nee

Klinisch Verloop tijdens hospitalisatie

Electieve (>24u na opname) coronarografie: Ja Nee

In-hospitaal mortaliteit: Ja Nee

Indien JA, datum: (dd/mm/yyyy)

Mortaliteit aan 30 dagen: Ja Nee

TIMI Risk score :

Minimal Data Base

Patient characteristics (TIMI risk score)

Reperfusion strategy

In Hospital Outcome

Electronic CRF

Enregistrement infarctus du myocarde avec élévation du segment ST Nom de l'hôpital:	Numéro du Crf: Nom du médecin responsable:

Caractéristiques du patient à l'admission

Date d'admission: (dd/mm/yyyy)
Le patient a donné son consentement au traitement de ses données : Oui Non
Date de naissance: (dd/mm/yyyy) Age:
Code postal du patient: Initiales du patient:
Sexe: Masculin Féminin Poids: <67 kg >=67 kg
Antécédents cardiovasculaires:
- Cardiopathie ischémique Oui Non
- Vasculopathie périphérique Oui Non
- Hypertension artérielle Oui Non
- Diabète mellitus Oui Non

Classe Killip: 1 (pas de l'insuffisance cardiac - 2 - 3 - 4 (shock)
Réanimation cardio-pulmonaire: Oui Non
Pression systolique: <100 mmHg >=100 mmHg
Rythme cardiaque: <100 pulsations/minute >=100 pulsations/minute
ECG: IM antérior - IM no-antérior - liBB

Traitement par reperfusion dans les premières 24 heures

Temps d'ischémie totale: <4u / 4-8u / 8-12u / 12-24u
(temps écoulé depuis le début des troubles jusqu'au traitement)
"Door-to-balloon/needle" temps: <30min / 30-60 min / 60-90 min / 90-120 min / >120min
(temps à partir du premier contact médical jusqu'au début de la reperfusion)
Traitement par reperfusion:
Thrombolyse Angioplastie primaire
Angioplastie de sauvetage Angioplastie facilitée
Pas de traitement par reperfusion:
Motif:
Thrombolyse pré hospitalière: Oui Non
Transfert vers un centre d'angioplastie: Oui Non

Déroulement clinique pendant hospitalisation

Coronarographie élective (>24h après l'admission): Oui Non
Mortalité hospitalière: Oui Non
Si oui, date: (dd/mm/yyyy)
Mortalité à 30 jours: Oui Non

TIMI Risk score :

Minimal Data Base

Definition ST Elevation Myocardial Infarction:

- Clinical picture of acute myocardial infarction with significant ST-T elevation in at least two ECG –leads
  (>0.1 mV in peripheral leads, >0.2mv in precordial leads)
- STEMI as an acute complication of a coronary intervention is excluded from the STEMI registry

Minimal Data Base

HOSPITAL IDENTIFICATION:

- The first hospital where patient is admitted and where he stays for more than 24 hours

Example:

1. STEMI patient admitted in hospital A
   transfer for PCI to hospital B and back
   discharge in hospital A
   > hospital A completes the e-CRF

2. STEMI patient admitted in hospital A
   transfer for PCI in hospital B
   discharge (or death) in hospital B
   > hospital B completes the e-CRF

Minimal Data Base

PATIENT IDENTIFICATION:

- Informed consent (cf privacy law)
  example of document on the website
- No ethical documents needed
- Identification on the local CRF: free text
  (will not appear in the analysis)

Minimal Data Base

CARDIOVASCULAR HISTORY

- **Ischemic heart disease:**
  history of MI, angina, PCI, CABG
- **Peripheral vascular disease(arterial):**
  history of claudicatio, CVA, TIA, peripheral revascularisation
- **Arterial Hypertension:**
  Bloodpressure >140/90 or under treatment
- **Diabetes mellitus**
  fasting glycemia >120 mg% or under treatment

Minimal Data Base

Hemodynamic status on admission:

- Systolic bloodpressure < or > 100mmHg
- Heart rate < or > 100 bpm
- Killip Class
  - 1: no signs of cardiac failure
  - 2: crepitations at the lung bases
  - 3: pulmonary edema
  - 4: cardiogenic shock
- ECG : anterior - non-anterior - LeftBBB

Minimal Data Base

Reperfusion strategy in acute phase:

- **Thrombolysis**
- **Primary PCI /CABG**
  = urgent angiography with PCI if needed
- **Facilitated PCI**
  = urgent PCI following lytic therapy
  (thrombolyis or GP IIb/IIIa antagonists)
- **Rescue PCI**
  = urgent PCI after failure of thrombolytic therapy
- **No reperfusion therapy**

Minimal Data Base

Time and transport issues

- **Total ischemic time:** <2h, 2-4h, 4-8, 8-12, 12-24, >24h

  time from onset of pain until start of reperfusion therapy (thrombolysis or first balloon inflation)

- **Door-to balloon/needle time:**

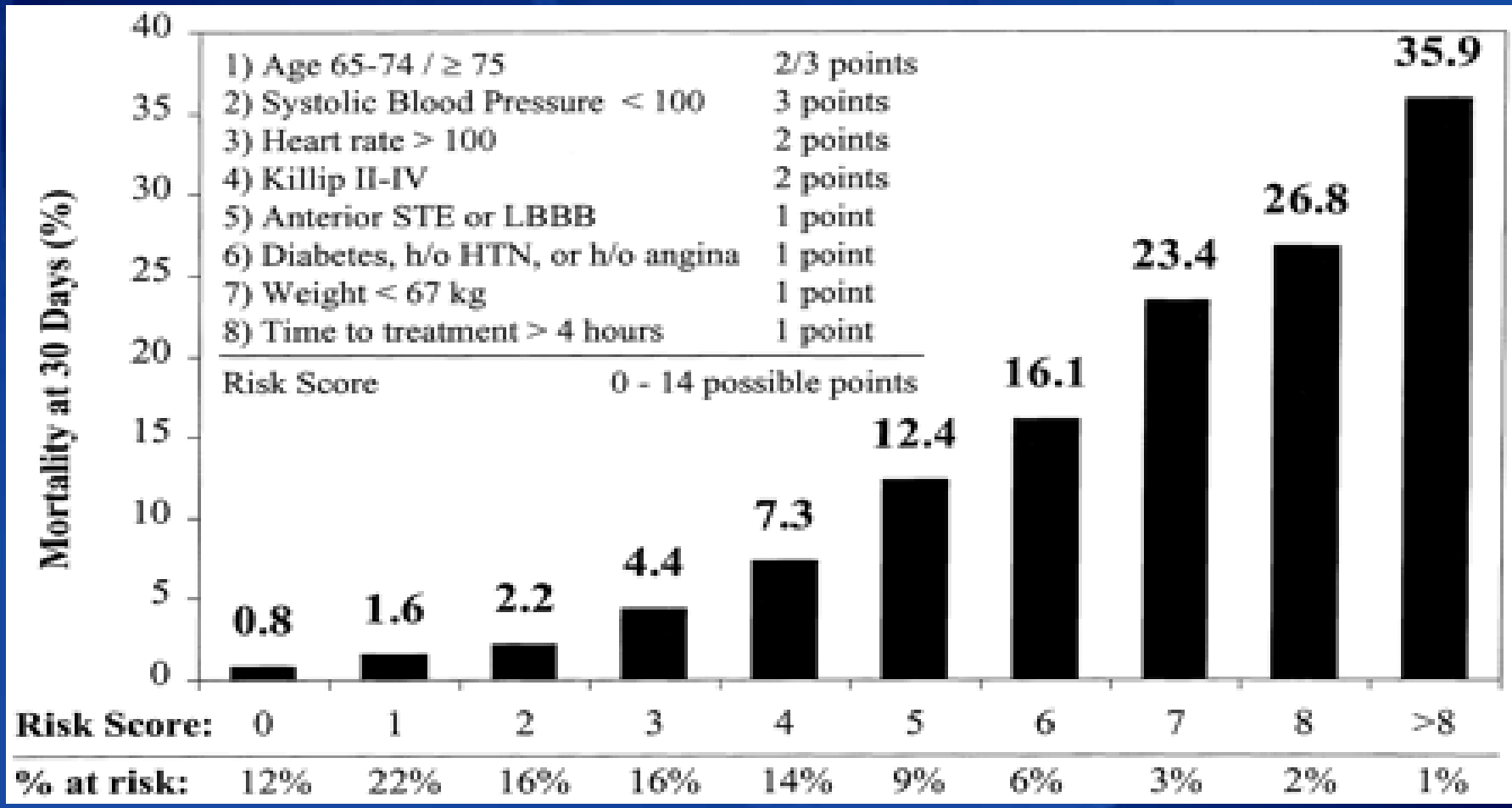
  <30min, 30-60, 60-90, 90-120, >120 min, NA

  time from diagnosis until begin of reperfusion therapy (thrombolysis or first balloon inflation)

- **Transfer from one hospital to another**

- **Use of pre-hospital thrombolysis**

TIMI risk score (automatically calculated)



Circulation: 2000;102:2031

Minimal Data Base

Clinical outcome

- In hospital mortality
  (up to one month)
- Elective coronarography (outside the acute phase)
- Mortality at one month (facultatif)

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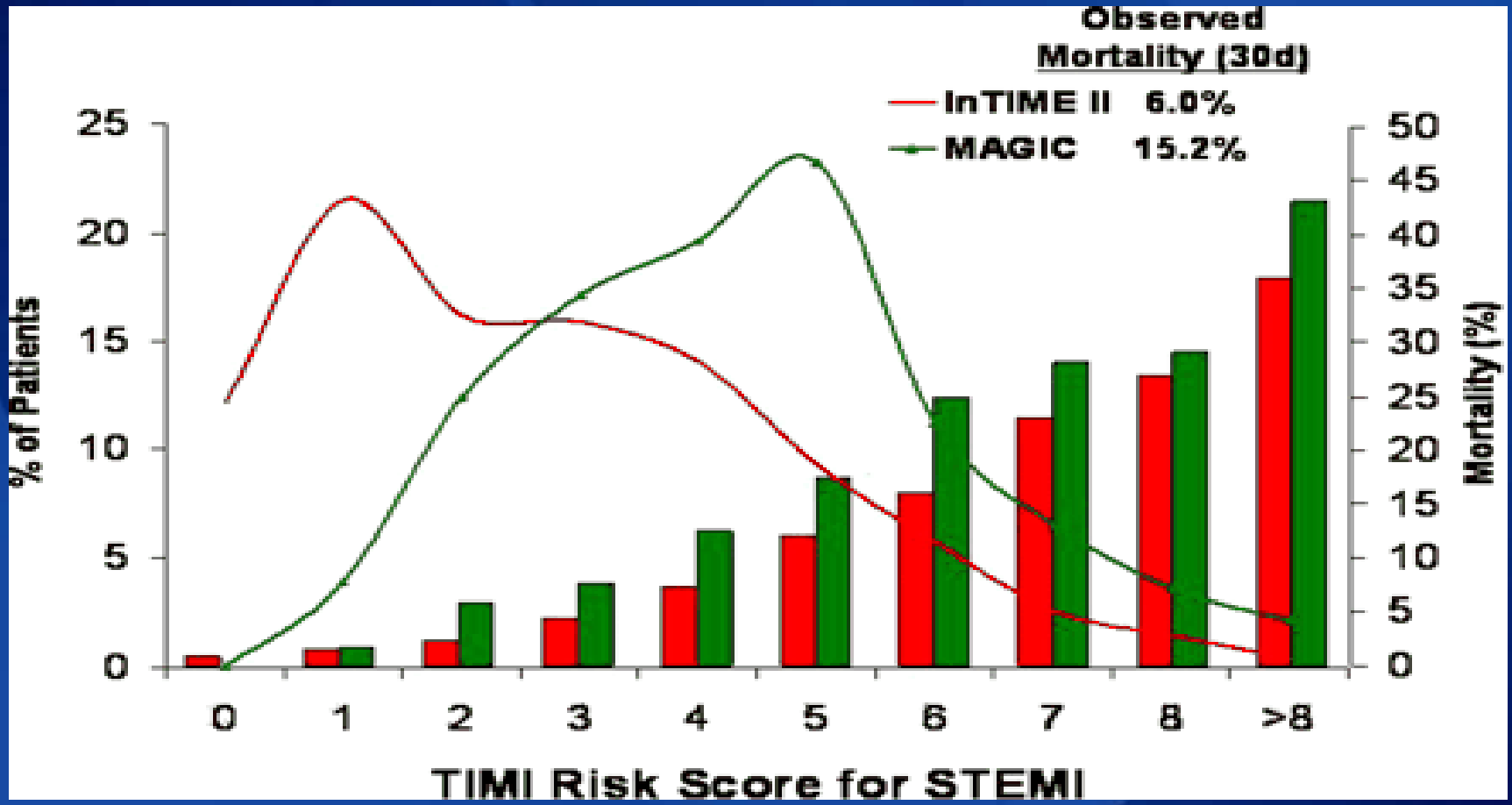
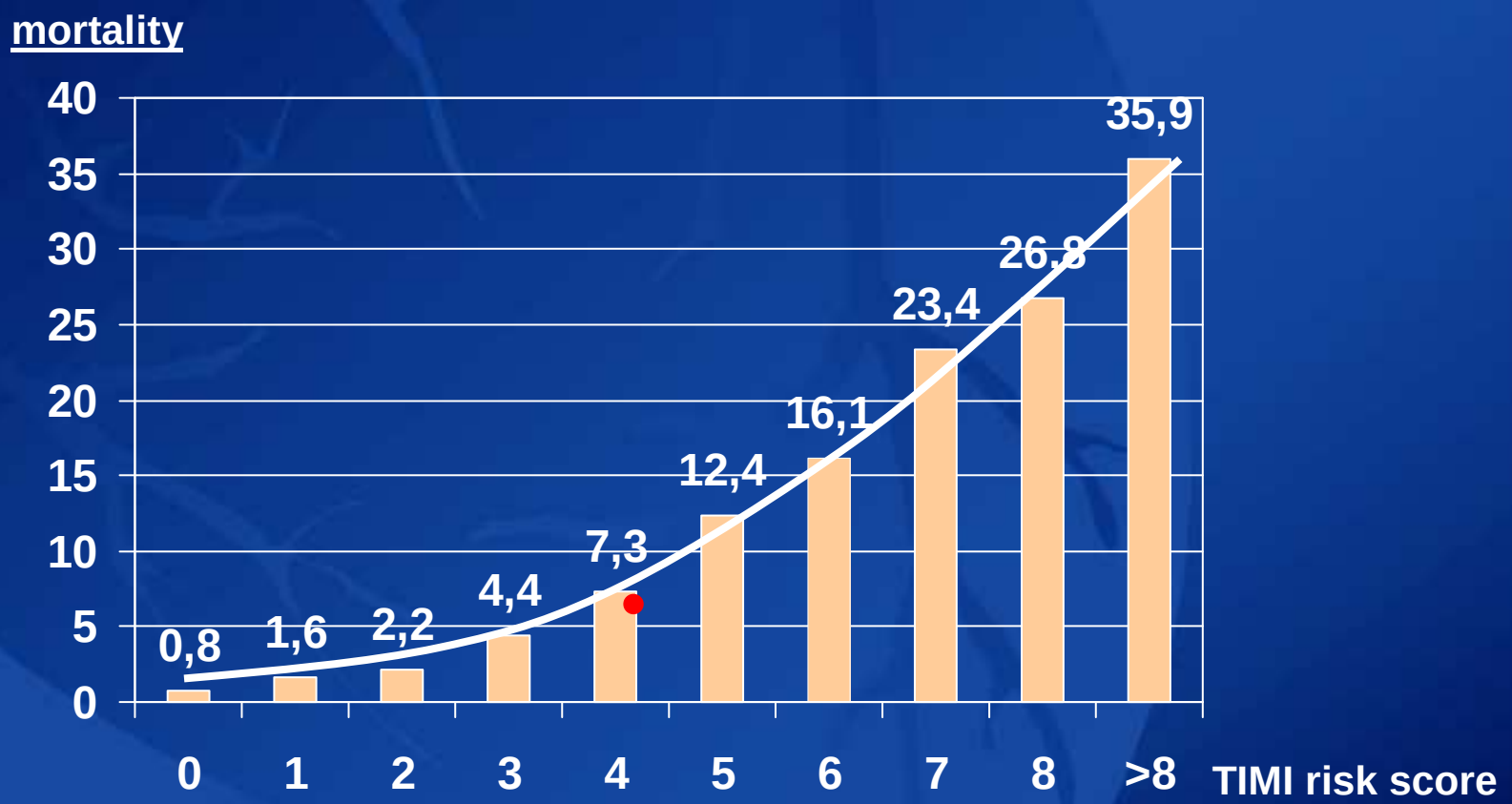
Report – analysis – benchmarking: on-line !!

- **Enrollment graphs:**
  - number of included patients per month
  - number of included patients per region (province)
  - number of included patients per hospital (anonymous)
- **Graph: mortality versus TIMI risk-score (see figure)**
- **Benchmarking: Belgian data vs region vs centrum**

Benchmarking: mortality



Mortality versus TIMI risk score



INTIME II (n=14114)

N= 300 - avg mortality: 6%, avg TIMI risk score= 4

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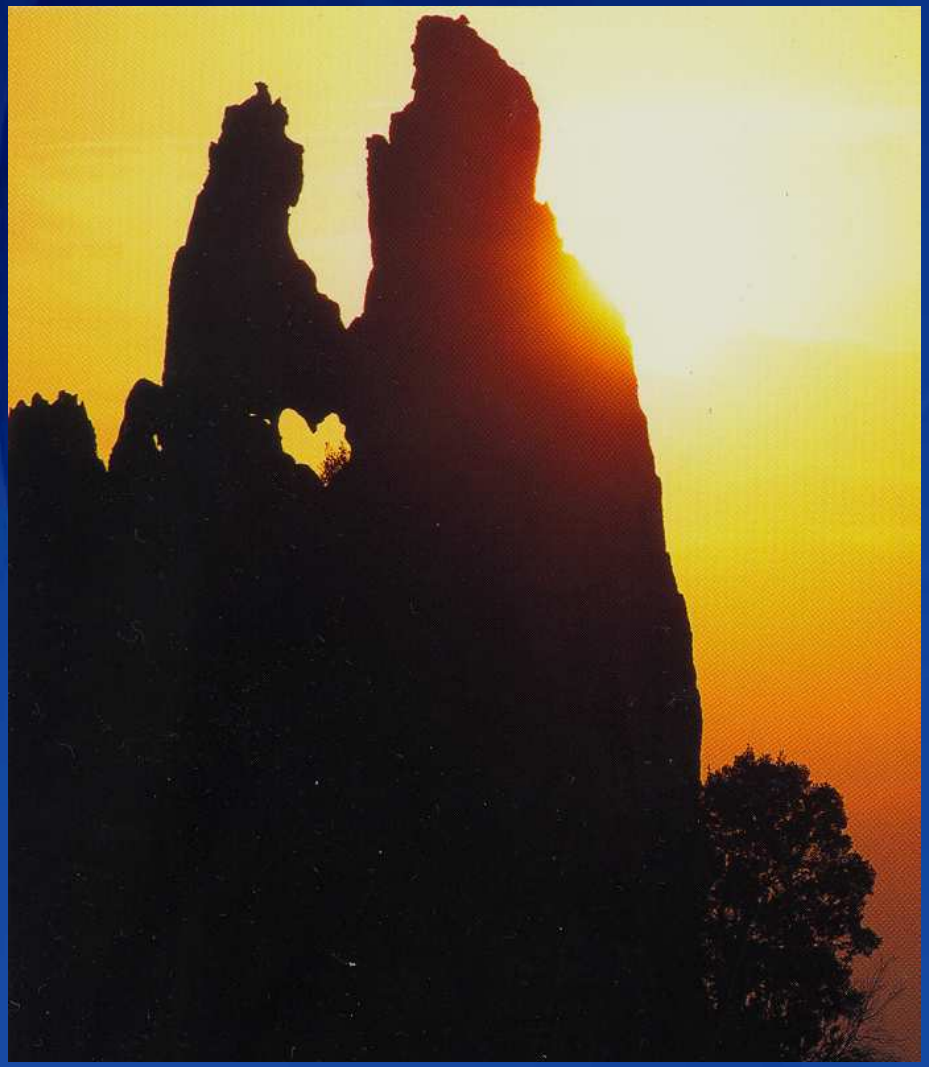
Practical issues

- Minimal PC requirements
- Website: https://www.biwacstemi.be
  - Username and password will be mailed to you
  - Website: different items
    - STEMI: e-CRF – list of included patients of the hospital
    - Reports (graphs, data benchmarking)
    - Documents (e.g. blanco CRF, explanation, guidelines)
    - Contact address of the steering committee members



Try it out

and

enjoy