



## EMERGENCY CALL

### DISPATCH AND TIME MANAGEMENT

The dispatcher sends the nearest medical ambulance or doctor to the patient. The call taker has to estimate the time of the beginning of the cardiac symptoms.



### CALL TAKER INTERVIEW

Identification of cardiac syndromes  
PAIN: chest, stomach, shoulder or arms, intrascapular  
VEGETATIVE SYNDROMES: vomiting, nausea, cold sweat, pallid cut  
DYSPINEA, ARRITHMIAS

## CONSIDER ASPIRIN ORALLY SUBMINISTRATION

### FMC

#### First Medical Contact

The doctor has to estimate the time from the appearance of the first symptoms to the arrival of the medical ambulance, called FMC Time. Apply a 12 canal ECG to assess the clinical situation.

### NSTEMACS

Non ST Elevation  
Acute Coronary Syndrome

### STEACS

ST Elevation Acute Coronary Syndrome  
or Left bundle branch block or pacing rhythm with typical clinical symptoms

### FMC TIME INDEPENDENT DIRECT

emergency transport to the coronary Unit  
hemodynamically instable patient  
cardiogenic shock  
contraindicated fibrinolytic therapy  
patient conscious and with typical symptoms  
persistent angina  
clinical signs of heart failure  
potentially lethal arrhythmias (V7/V9)

### LOCAL HOSPITAL

patient history  
clinical evaluation  
ECG  
efficacy of the analgetic therapy  
laboratory monitoring of troponin within 6 and 12 hours  
monitoring of the ST segment  
RISK score assessment  
emorrhagic risk stratification  
other exams

<2h  
FMC TIME  
hyperacute period

>2h  
FMC TIME  
acute period

<60'  
TRANSPORT TIME  
to the Coronary Unit

>60'  
TRANSPORT TIME  
to the Coronary Unit

>120'  
TRANSPORT TIME  
to the Coronary Unit

<120'  
TRANSPORT TIME  
to the Coronary Unit

### PRIMARY PCI

### FIBRINOLYTIC THERAPY WITHIN 30'

### PRIMARY PCI

### DRUGS

The call taker recommends to the patient to take 500mg of Aspirin orally if she/he does not presents some contraindication:

stomach ulcer  
allergy  
coagulation disease  
liver pathology

### ANTI THROMBIN AND ANTIPLATELET CO THERAPY

With primary PCI:  
Aspirin: oral dose of 500mg or i.v. dose of 500mg if oral ingestion is not possible  
Clopidogrel: oral loading dose of at least 300mg, preferably 600mg  
Heparin: i.v. bolus at a usual starting dose of 100U/kg weight.

### With Fibrinolytic Therapy:

Aspirin: oral dose of 500mg or i.v. dose of 500mg if oral ingestion is not possible  
Clopidogrel: oral loading dose of 300mg for patients <75years of age; for patients >75years of age 75mg  
Heparin: i.v. bolus of 40U/kg with a maximum of 4000U followed by an i.v. infusion of 12U/kg with a maximum of 1000U/h for 24-48h  
Enoxaparin: in patients >75 years and creatinine levels >2mg/dL or >21mol/L (men) or 2mg/mL or 17mmol/L (women): i.v. bolus of 30mg followed 15 min later by s.c. dose of 1mg/kg every 12h until hospital discharge for a maximum of 9 days.  
The first two s.c. doses should not exceed 100mg.

In patients >75 years: no i.v. bolus; start with first s.c. dose of 0.75mg/kg with a maximum of 75mg for the first two s.c. doses.  
In patients with creatinine clearance of <30mL/min, regardless of age, the s.c. doses are repeated every 24h.

In patients with no antithrombin and antiplatelet co therapy

## Wide operating guidelines for the treatment of patients with STEACS, NSTEMACS and stable coronary insufficiency

TENECTEPLASE (TNK-SPA)  
Single i.v. bolus  
30mg if <65kg  
50mg if 65 to <75kg  
75mg if 75 to <85kg  
100mg if 85 to <95kg  
150mg if >95kg or

ALTEPLASE (t-PA)  
15mg i.v. bolus  
0.75mg/kg over 30min;  
then 0.5mg/kg over 60min i.v.  
Total dosage not to exceed 100mg

### CONTRAINDICATIONS of Fibrinolytic Therapy

**ABSOLUTE**  
haemorrhagic stroke or stroke of unknown origin at any time  
ischemic stroke in preceding 5 months  
central nervous system trauma or neoplasm  
recent major trauma/surgery/ head injury (within preceding 3 weeks)  
gastrointestinal bleeding within the last month  
known bleeding disorder  
active development of compressive aneurysm (e.g. liver biopsy, lumbar puncture)

**RELATIVE**  
transient ischemic attack in preceding 5 months  
oral anticoagulant therapy  
pregnancy or within 1 week post partum  
refractory hypertension (systolic blood pressure >180mmHg and/or diastolic blood pressure >110mmHg)  
advanced liver disease  
refractive endocarditis  
active peptic ulcer  
refractory resection

### DIRECT TRANSPORT TO THE CORONARY UNIT

### NOT EMERGENCY SECONDARY TRANSPORTS

In this category are included all patients they have to be in Bolzano not earlier than within 12 or 24 hours. They have to be accompanied by the Medical Doctor of the local hospital. The transport Ambulance will be arranged by the Emergency Central 118.

Transports within 72 hours:  
elevated troponin  
dramatically ST segment or T wave modification  
Diabetes Mellitus  
Renal failure (Cr >400µmol/L/2.3mg/dL)  
Heart failure (EF <40%)  
prior infarction episode  
after MI  
after PCI within 6 months  
after aortic aneurysm, hyaline  
moderately or elevated risk (classified by the GRACE risk score).

Not indicated or elective Patients:  
not recurrent pain  
no signs of heart failure  
no ECG modification after 6 or 12 hours  
no inotropism after 6 or 12 hours

### HELICOPTER TRANSPORT

The helicopter lands in the hospital. The patient has to be transported to the coronary Unit. The helicopter procedure before starting is:

### INTUBATED OR INCANULATED

Intubated or incanulated  
PREREQ: ADI disapproval.  
The Emergency Call Agency room is possible.

### RETURN TRANSPORT

After successful PCI normal with:  
- one of the nurse  
- ECG to verify the ADI. The Emergency Call agency organizes the ambulance.  
- with the Medical Doctor who accompanied the patient to Bolzano in accord with the Emergency Call agency.  
- with the Medical Doctor from the Emergency Medical Service 118 in accord with the Emergency Call agency.  
- by the Emergency Call agency personnel.

This procedure has to be accorded time by time with the responsible medical doctor from the Emergency Call agency.

**Literature**  
Petersen HR, et al. Management of Acute Myocardial Infarction in patients presenting with ST-segment elevation. N Engl J Med 2009;361:2590-2599  
Joshi P, et al. Management of Acute Coronary Syndrome (ACS) in patients presenting without persistent ST-segment elevation. N Engl J Med 2009;361:2590-2599  
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# Il protocollo cardio di bolzano



Dolore toracico acuto :

centralizzazione all' ospedale centrale di  
Bolzano



## Centralizzazione

- Paziente nell' ospedale a più alta specializzazione
- Razionalizzazione della diagnostica
- Iter decisionale abbreviato
- Minima compromissione dell' organizzazione del lavoro in Cardiologia ed UTIC
- Redistribuzione dei pazienti in periferia a terapia urgente terminata



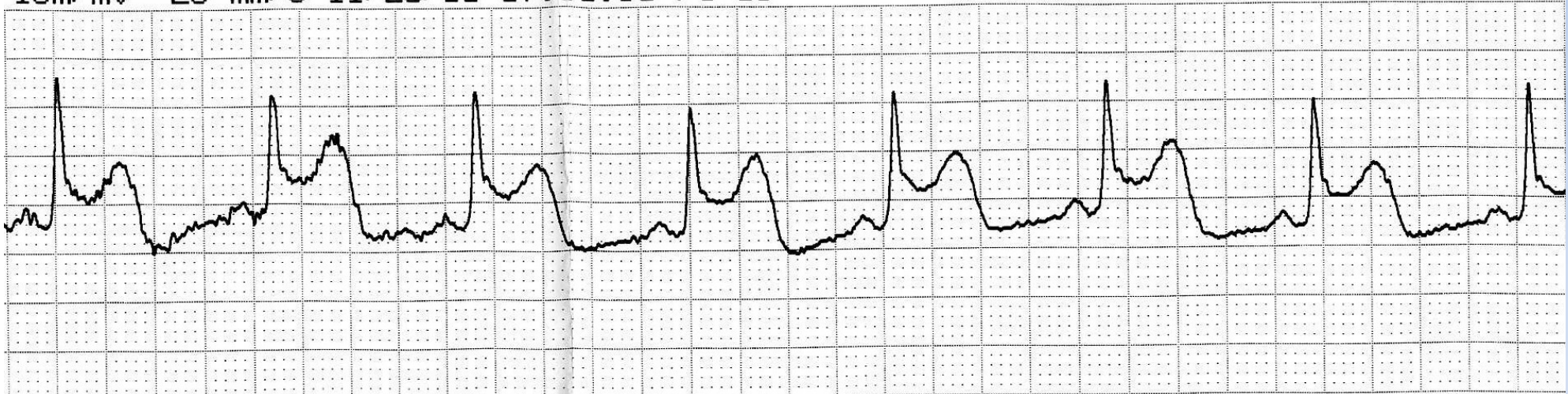
# Ima conclamato

Difficile diagnosi sul campo  
Difficile gestione terapeutica  
Difficile gestione organizzativa



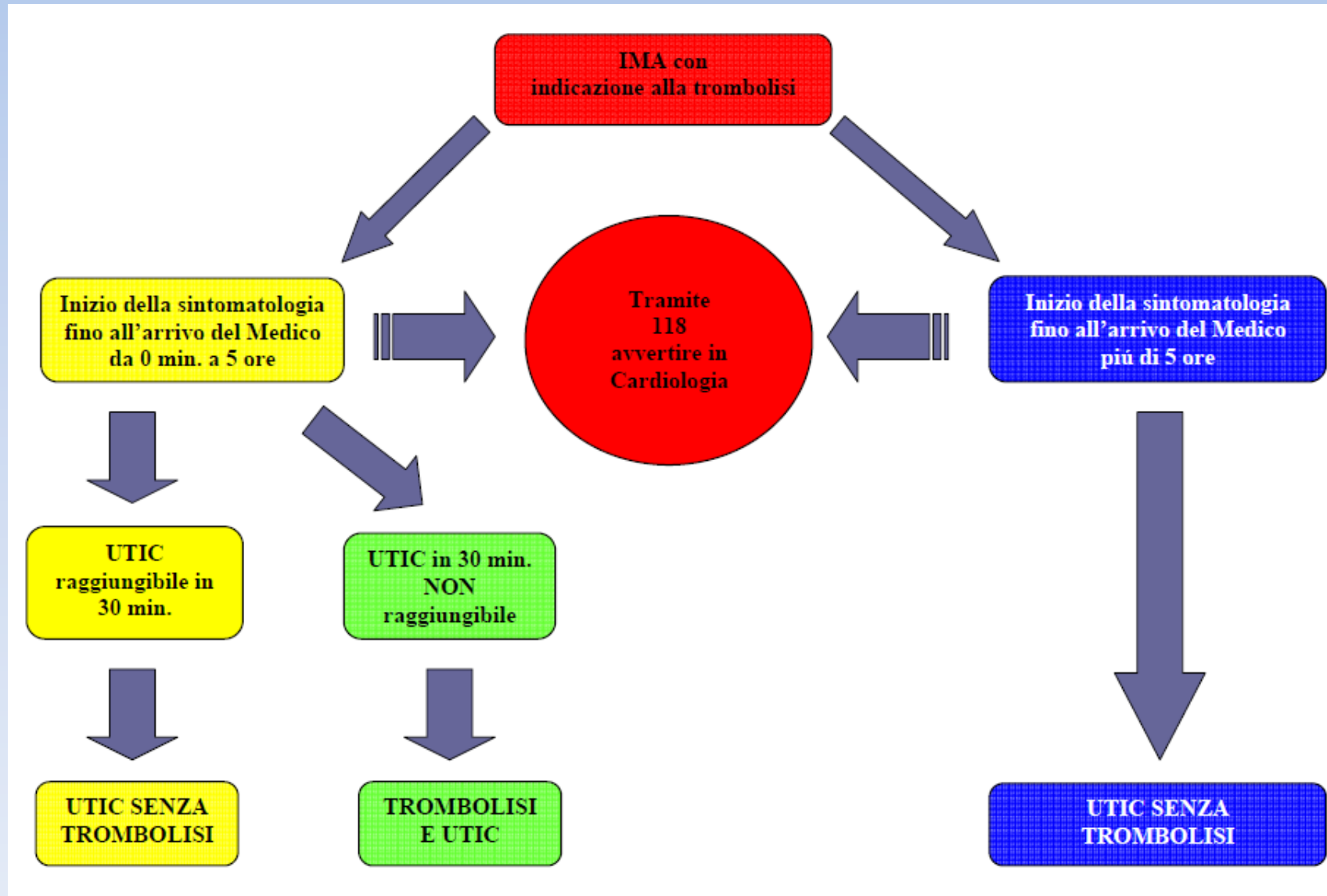


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no Diag. A OSS=Off PAI1=Off PAI2=Off CO2=-- [--:--]

Non sempre è così evidente







<b>GLASGOW COMA SCALE</b> APERTURA DEGLI OCCHI/BAUEN OFFEN 1 spontanea/spontan 2 a comando/Aufforderung 3 al dolore/Schmerz 1 nessuna/nicht		orientato/orientiert confuso/confüßig privo di coscienza/bewußtlos MOVIM. D. ESTERNO/EXTREMIT.-BEWEG. normale/normale 2 1 1 1		req. resp./atemn. normale/normale 3.2.1. DOLORE/SCHMERZ 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100		req. resp./atemn. normale/normale 3.2.2. ECG / EKG 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100		8. RISULTATO/ERGEBNIS 8.1. DESCRIZ. INTERV./EINSATZ/BESCHR. 8.2. MANOVRE DI 1° SOCC./ERSTHILFERMASSN. 8.3. CLASSIFICAZ. DELL'URV./NOTFALLKATEGORIE 8.4. NACA SCALE 8.5. OSSERVAZIONI/BEMERKUNGEN	
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4. FERITE/VERLETZUNGEN 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 									



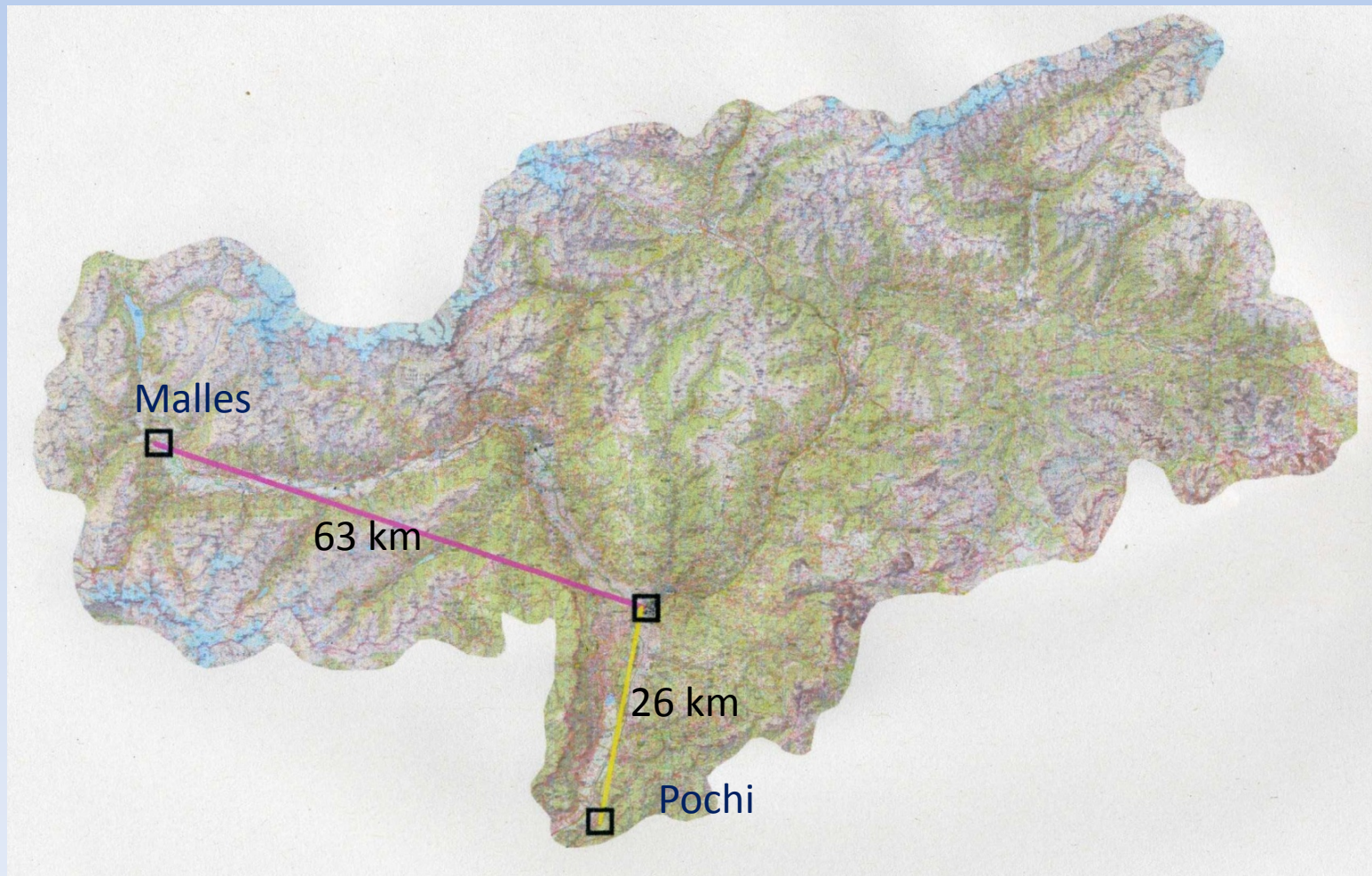
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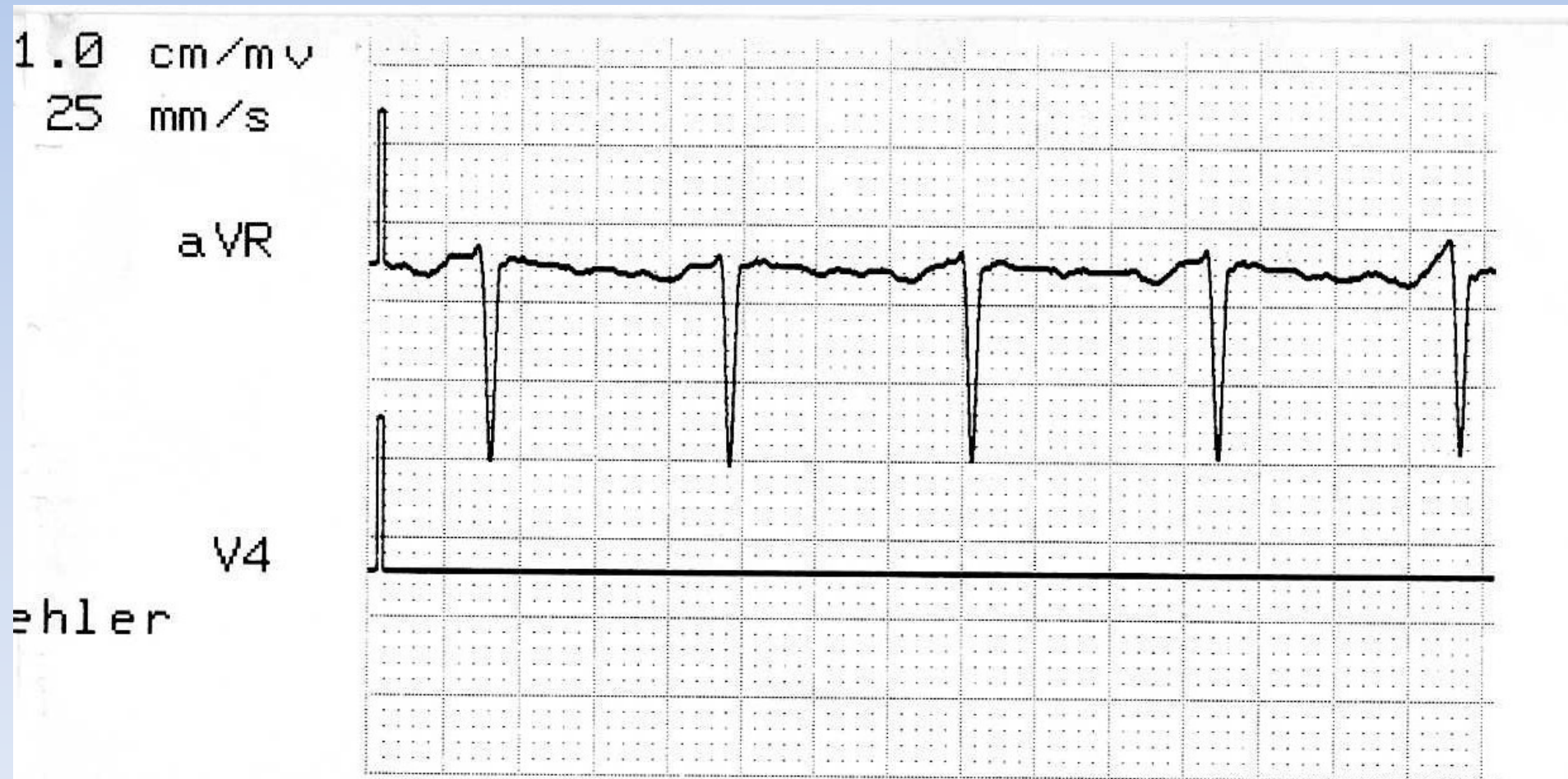
## STEMI (2.4 STENTING)

ICD3

<input type="checkbox"/> trasporto in ospedale/transport ins KH <input type="checkbox"/> secondario/Sekundärtransport <input type="checkbox"/> rifiuto trasporto/Transportverweigerung <input type="checkbox"/> solo visita e trasporto/Visite und Therapie <input type="checkbox"/> cons. di altro mezzo di socc./Übergab. an anderen Rettungsmittel <input type="checkbox"/> proven. di altro mezzo di socc./Übernahme von and. Rettungsm. <input type="checkbox"/> rinamenz. con socc./ärztliche Reanimation <input type="checkbox"/> rinamenz. senza socc./ärztliche Reanimation <input type="checkbox"/> decesso durante il trasp./Tod auf dem Transport <input type="checkbox"/> constatazione di morte/Todesfeststellung ora/Zeitpunkt <input type="checkbox"/> intervento sospeso/Einsatz annulliert	<input type="checkbox"/> sufficiente/sufficient <input type="checkbox"/> insufficiente/insufficient <input type="checkbox"/> nessuna/kleine <b>8.3. CLASSIFICA. DELL'URG./NOTFALLKATEGORIE</b> <input type="checkbox"/> non urgente/keine Notfall <input type="checkbox"/> malattia acutaleute Erkrankung <input type="checkbox"/> interessapone/Vergiftung <input type="checkbox"/> lesione/Verletzung da incidente/durch Unfall <input type="checkbox"/> straddle/Vorfahr <input type="checkbox"/> sul davanti/vorn <input type="checkbox"/> tempo lievon/seitlich <input type="checkbox"/> altro/sondige	<input type="checkbox"/> Glasgow min./geringste Skizung <input type="checkbox"/> il accertamento amb./amb. Abklärung <input type="checkbox"/> II livello/rationale Behandlung <input type="checkbox"/> IV periodo di morte non esclusibile/Lebensgefahr nicht ausschließbar <input type="checkbox"/> V periodo di morte scutaleute Lebensgefahr <input type="checkbox"/> VI rianimazione/Reanimation <input type="checkbox"/> VII morte/Tot
<b>10. OSSERVAZIONI/BEMERKUNGEN</b>           		

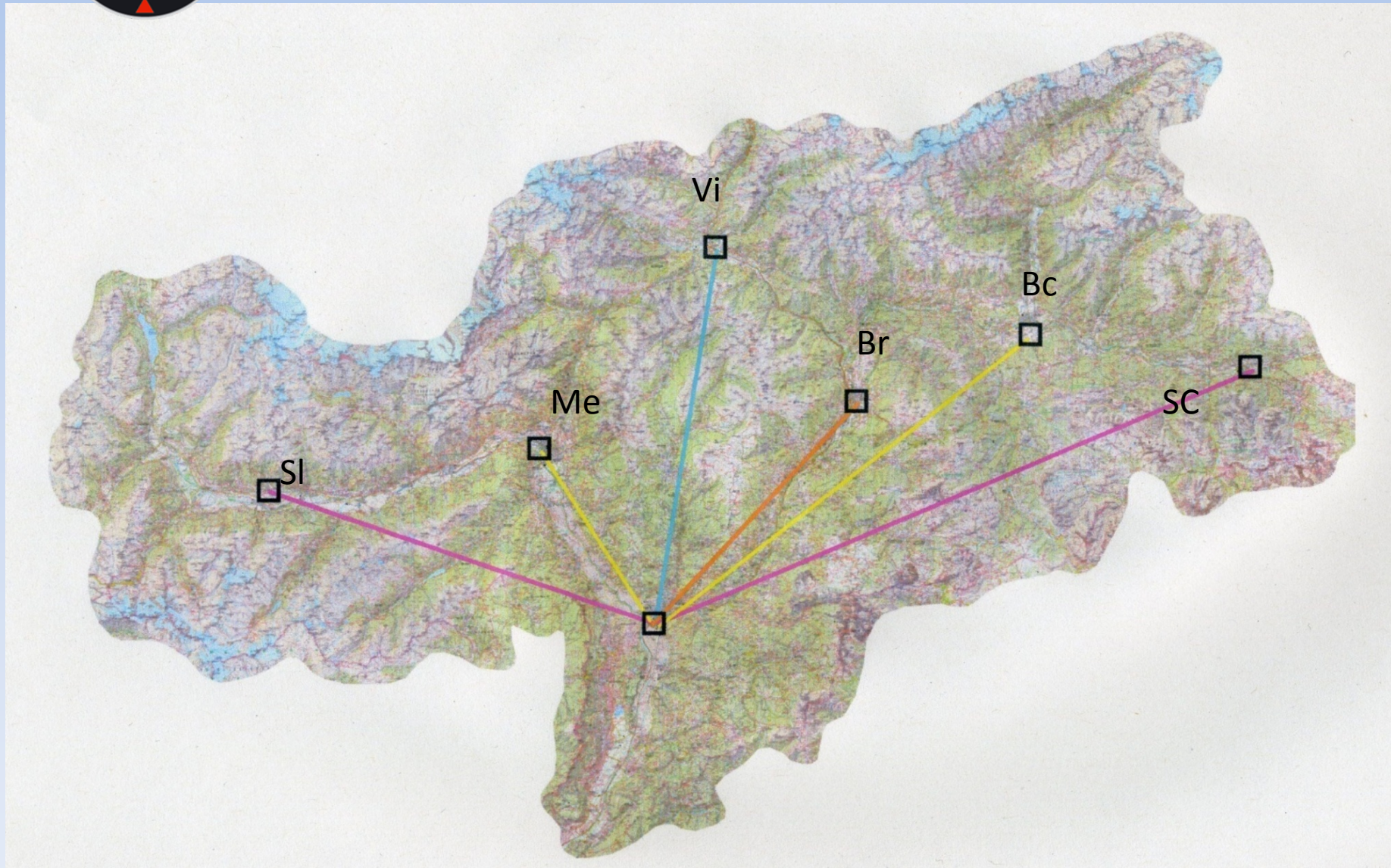






Esito sperato







## Centralizzazione

- Paziente nell' ospedale a più alta specializzazione
- Razionalizzazione della diagnostica
- Iter decisionale abbreviato
- Redistribuzione dei pazienti in periferia a terapia urgente terminata



## Trasporti secondari

Non sono qui considerati i trasporti generati da medici sul luogo dell' emergenza e pazienti affidati all' elisoccorso



## Trasporti secondari

Nella propria casistica 01 -11/2008

81 interventi

19 trasporti secondari



## Trasporti secondari

Pazienti cardiologici:

Da BZ verso VR	4
Dalla periferia a BZ	2
Da Bz ritrasferito ME	1

Dei 4 verso VR 1 solo era acuto



## Trasporti secondari

Restanti categorie:

Per BZ 6

Da BZ 2

Me –TN 1

Me - I 1

SI – I 1

Bc – I 1

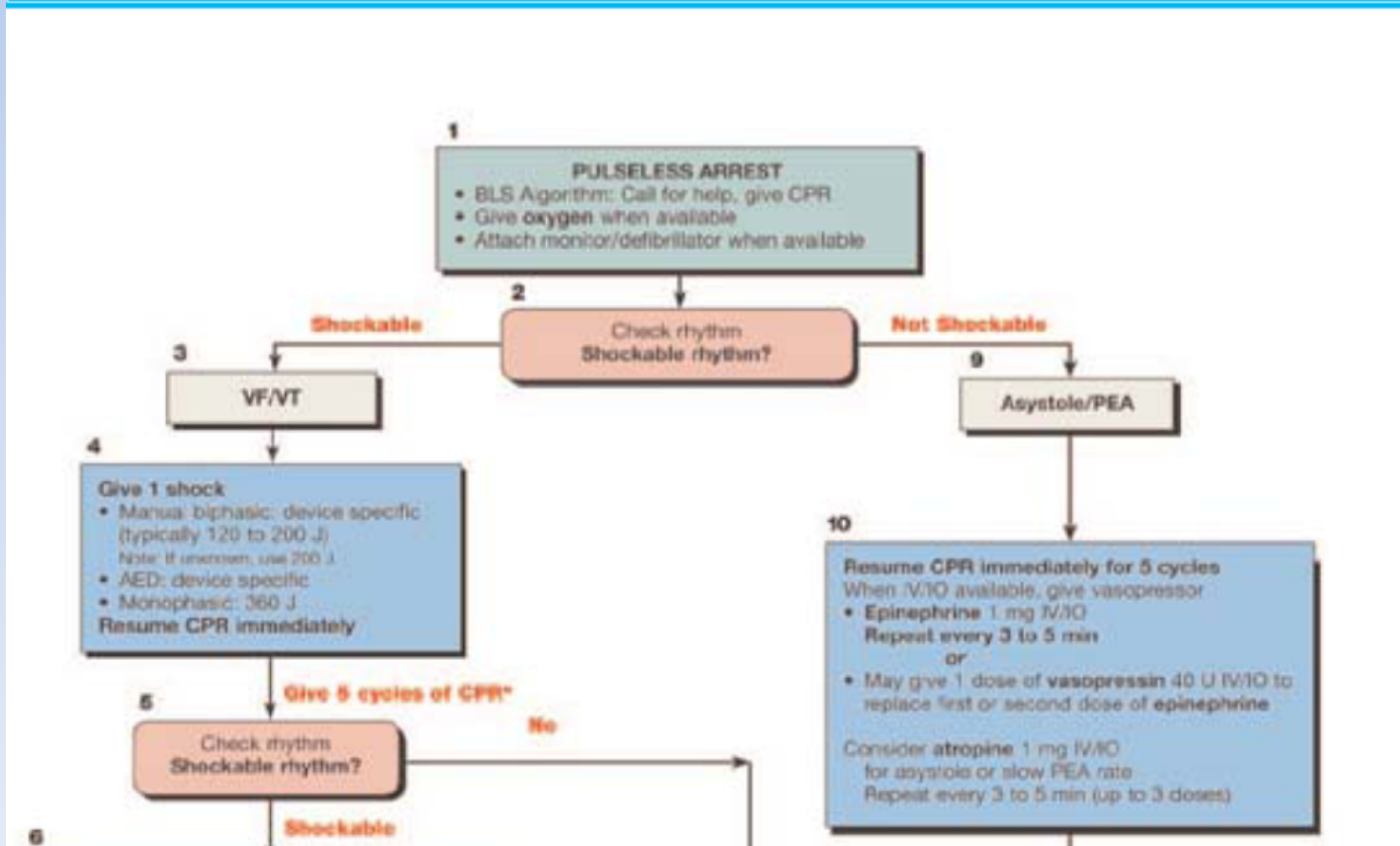


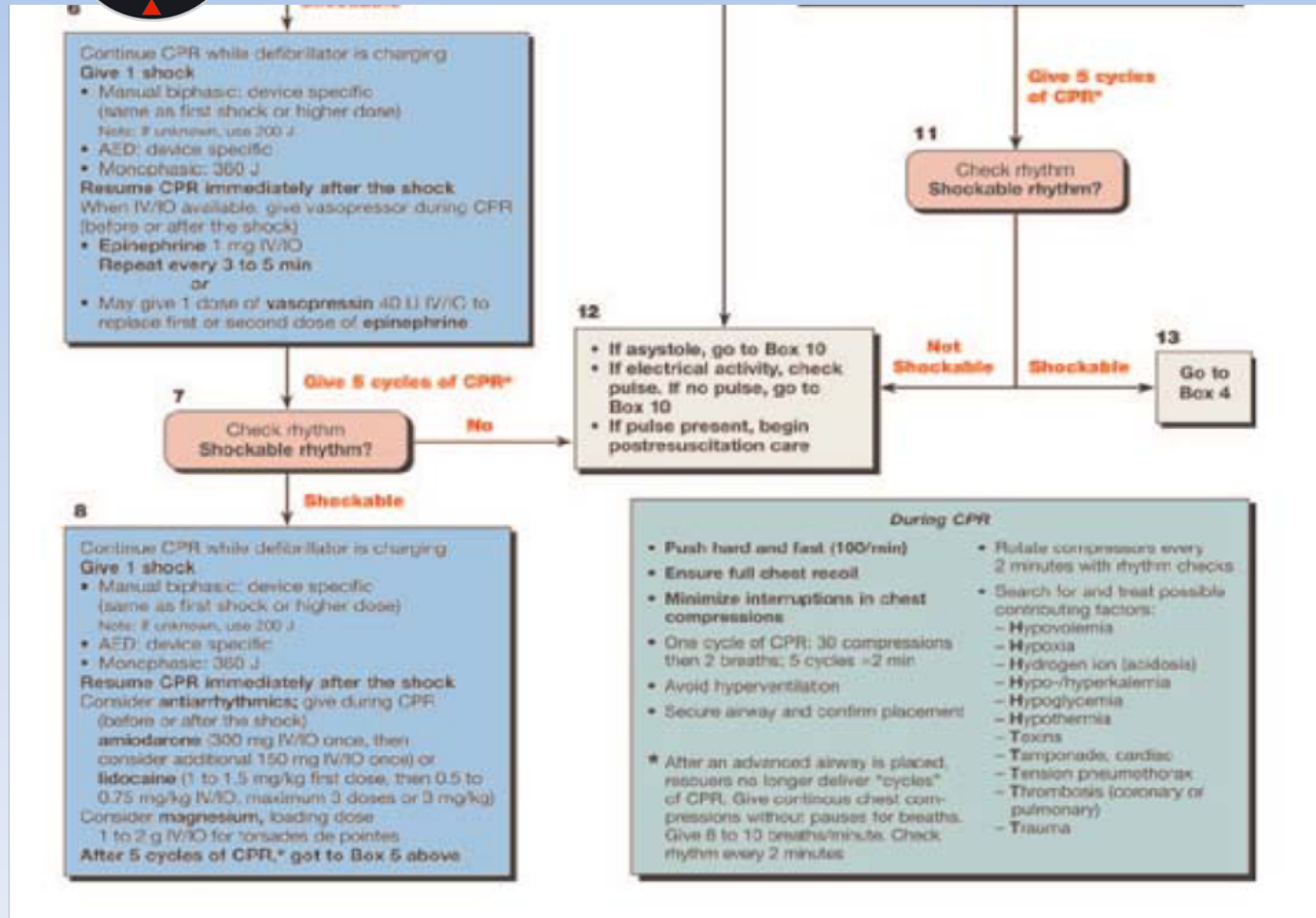


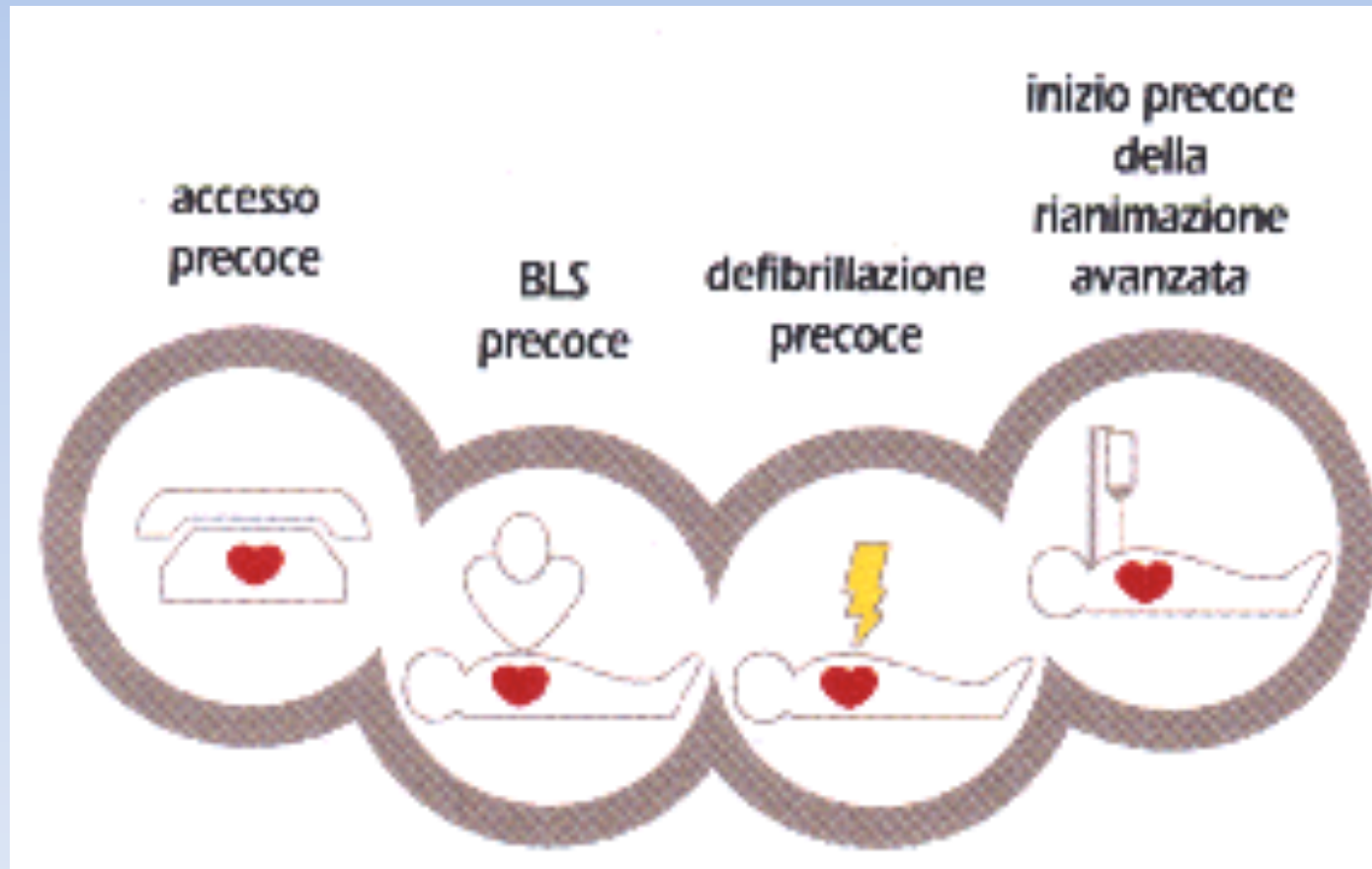
## I trasporti secondari:

- devono essere gestiti con criteri chiari di emergenza
- in elisoccorso solo pazienti con parametri vitali compromessi
- gestione dei trasporti secondari a chi li genera
- chiara definizione cosa sia un trasporto secondario

# Adult Advanced Life Support









- Chiamata d'emergenza

Formazione utenti ed operatori



## CALL TAKER INTERVIEW

### Identification of cardiac syndromes

PAIN: chest, stomach, shoulder or arms, intrascapular

VEGETATIVE SYNDROMES: vomiting, nausea, cold sweat, pallid cut

DISPNEA, ARITMIAS

Sensibilità dell'operatore

- Gestione oculata dell'interlocutore
- Corretta interpretazione del quadro situativo





## DISPATCH AND TIME MANGEMENT

The dispatcher sends the nearest medical ambulance or doctor to the patient. The call taker has to estimate the time of the beginning of the cardiac symptoms

## Anamnesi circostanziata della tempistica

- Insorgere
- Decorso
- Prodromi
- Anamnesi remota



## CONSIDER ASPIRIN ORALLY SUBMINISTRATION

- alta percentuale di pazienti  
già in trattamento con cardioaspirina
- alta diffusione del farmaco  
nelle scorte medicinali individuali



## FMC First Medical Contact

The doctor has to estimate the time from the appearance of the first symptoms to the arrival of the medical ambulance, called FMC Time. Apply a 12 canal ECG and assess the clinical situation.

Anamnesi  
circostanziata della  
tempistica

- Insorgere
- Decorso
- Prodromi
- Anamnesi remota



## NSTEACS

Non ST Elevation  
Acute Coronary Syndrome

### LOCAL HOSPITAL

patient history  
clinical valuation  
ECG  
efficacy of the analgetic therapy  
laboratory monitoring of troponin  
within 6 and 12 hours  
monitoring of the ST segment  
RISK score assessment  
emorrhagic risk stratification  
other exams

# TRATTAMENTO IN PERIFERIA



## STEACS

ST Elevation Acute Coronary Syndrome  
or Left bundle branch block or pacing  
rhythm with typical clinical symptoms

<2h  
**FMC TIME**  
hyperacute period

>2h  
**FMC TIME**  
acute period

<60'  
TRANSPORT TIME  
to the Coronary  
Unit

>60'  
TRANSPORT TIME  
to the Coronary  
Unit

>120'  
TRANSPORT TIME  
to the Coronary  
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<120'  
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to the Coronary  
Unit

**PRIMARY  
PCI**

**FIBRINOLYTIC  
TGERAPY WITHIN 30'**

**PRIMARY  
PCI**

**CORE  
MESSAGE  
DEL  
PROTOCOLLO**





## FIBRINOLYTIC THERAPY WITHIN 30'

### TENECTEPLASE (TNK-tPA)

Single i.v. bolus

30mg	if <60kg
35mg	if 60 to <70kg
40mg	if 70 to <80kg
45mg	if 80 to <90kg
50mg	if ≥90kg or

### ALTEPLASE (t-PA)

15mg i.v. bolus  
0.73mg/kg over 30min  
then 0.5mg/kg over 60min i.v.  
Total dosage not to exceed 100mg

# TERAPIA CONSIGLIATA



## CONTRAINDICATIONS of Fibrinolytic Therapy

### ABSOLUTE

- haemorrhagic stroke or stroke of unknown origin at any time
- ischaemic stroke in preceeding 6 month
- central nervous system trauma or neoplasm
- recent major trauma/surgery/ head injury (whitin preceeding 3 weeks)
- gastrintestinal bleeding within the last month
- known bleeding disorder
- aortic dissectionnon-compressible punctures (e.g. liver biopsy, lumbar puncture)

### RELATIVE

- transient ischaemic attack in preceding 6 months
- oral anticoagulant therapy
- pregnancy or within 1 week post partum
- refractory hypertension (systolic blood pressure >180mmHg and/or diastolic blood pressure >110mmHg)
- advanced liver disease
- infective endocarditis
- active peptic ulcer
- refractory resuscitation

# CONTRO- INDICAZIONI

## CONTRAINDICATIONS of Fibrinolytic Therapy

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 ischaemic stroke in preceeding 6 month  
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### RELATIVE

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 oral anticoagulant therapy  
 pregnancy or within 1 week postpartum  
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 advanced liver disease  
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## FMC TIME INDIPENDENT DIRECT

emergency transport to the coronary  
Unit

hemodynamically instable patient  
cardiogenic shock  
contraindicated fibrinolytic therapy  
patient conscious and with typical  
symptoms  
persitent angina  
clinical signs of heart failure  
potentially lethal arrythmias  
(VT/VF)

# CRITERI D'EMERGENZA ASSOLUTA

## DRUGS

The call taker recommends to the patient to take **500mg of Aspirin orally** if she/he does not presents some contraindication:

stomach ulcer  
allergy  
coagulation disease  
liver pathology

### ANTITHROMBIN AND ANTIPLATELET CO THERAPY

With primary PCI:

Aspirin: oral dose of 500mg or i.v. dose of 500mg if oral ingestion is not possible

Clopidogrel: oral loading dose of at least 300mg, preferably 600mg

Heparin: i.v. bolus at a usual starting dose of 100U/kg weight.

With fibrinolytic therapy:

Aspirin: oral dose of 500mg or i.v. dose of 500mg if oral ingestion is not possible

Clopidogrel: oral loading dose of 300mg for patients < 75years of age; for patients >75years of age 75mg

Heparin: i.v. bolus of 60U/kg with a maximum of 4000U followed by an i.v. infusion of 12U/kg with a maximum of 1000U/h for 24-48h

Enoxiparin: In patients >75 years and creatinine levels 2.5mg/mL or 221mol/L (men) or 2mg/mL or 177mol/L (women): i.v. bolus of 30mg followed 15 min later by s.c. dose of 1mg/kg every 12h until hospital discharge for a maximum of 8 days.

The first two s.c. doses should not exceed 100mg.

In patients >75 years: no i.v. bolus; start with first s.c. dose of 0.75mg/kg with a maximum of 75mg for the first two s.c. doses.

In patients with creatinine clearance of <30mL/min, regardless of age, the s.c. doses are repeated every 24h.

Incoscient patient: no antithrombin and antiplatled co therapy



**GRAZIE  
DELL'ATTENZIONE**



