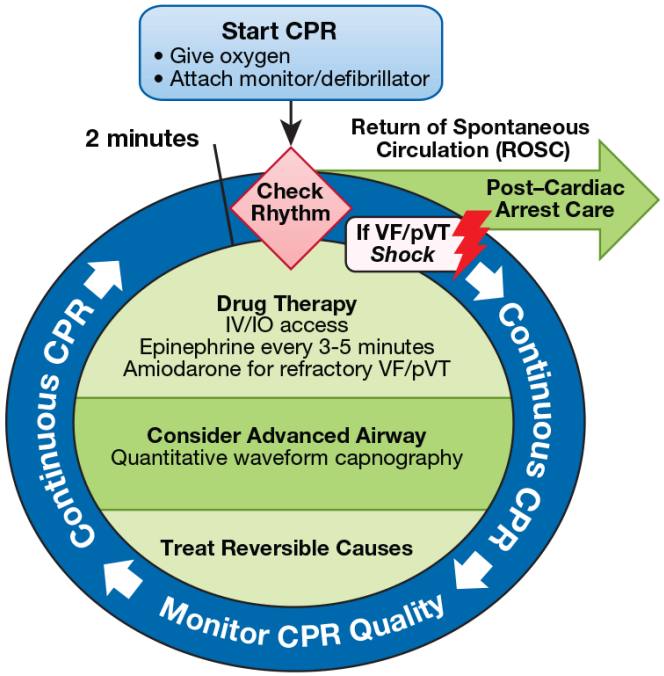

Flughafen, 14.14 Uhr
Reanimation durch das
Ambulanzteam

Adult Cardiac Arrest Circular Algorithm—2015 Update



CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Rotate compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio.
- Quantitative waveform capnography
  - If P_{ETCO_2} <10 mm Hg, attempt to improve CPR quality
- Intra-arterial pressure.
  - If relaxation phase (diastolic) pressure <20 mm Hg, attempt to improve CPR quality.

Shock Energy for Defibrillation

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

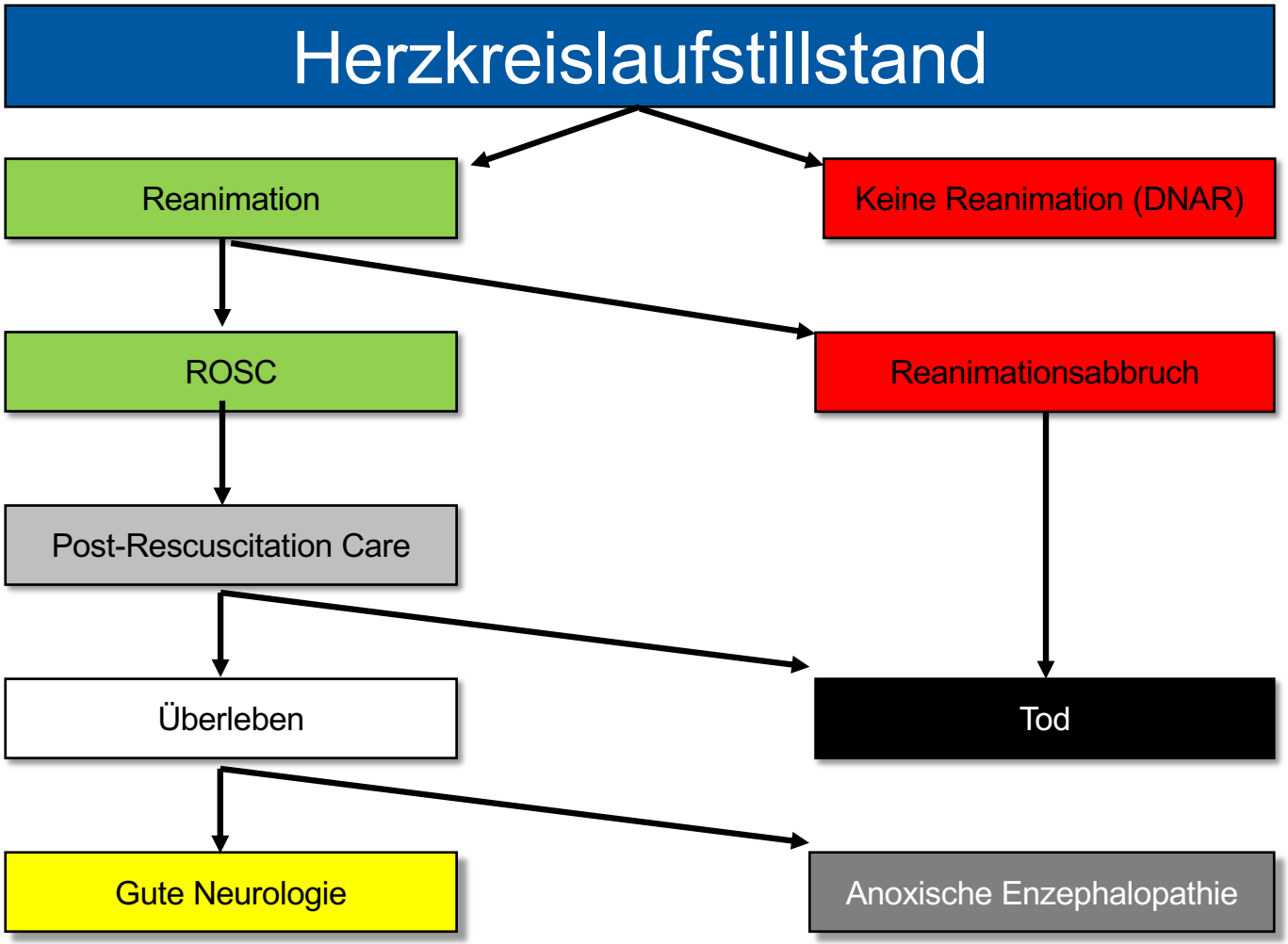
Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in P_{ETCO_2} (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

- **H**ypovolemia
- **H**ypoxia
- **H**ydrogen ion (acidosis)
- **H**ypo-/hyperkalemia
- **H**ypothermia
- **T**ension pneumothorax
- **T**amponade, cardiac
- **T**oxins
- **T**hrombosis, pulmonary
- **T**hrombosis, coronary


Flughafen, 14.20 Uhr
Return of Spontaneous Circulation
(ROSC)


Herzkreislaufstillstand
Reanimation
Keine Reanimation (DNAR)
ROSC
Reanimationsabbruch
Post-Rescuscitation Care
Überleben
Tod
Gute Neurologie
Anoxische Enzephalopathie

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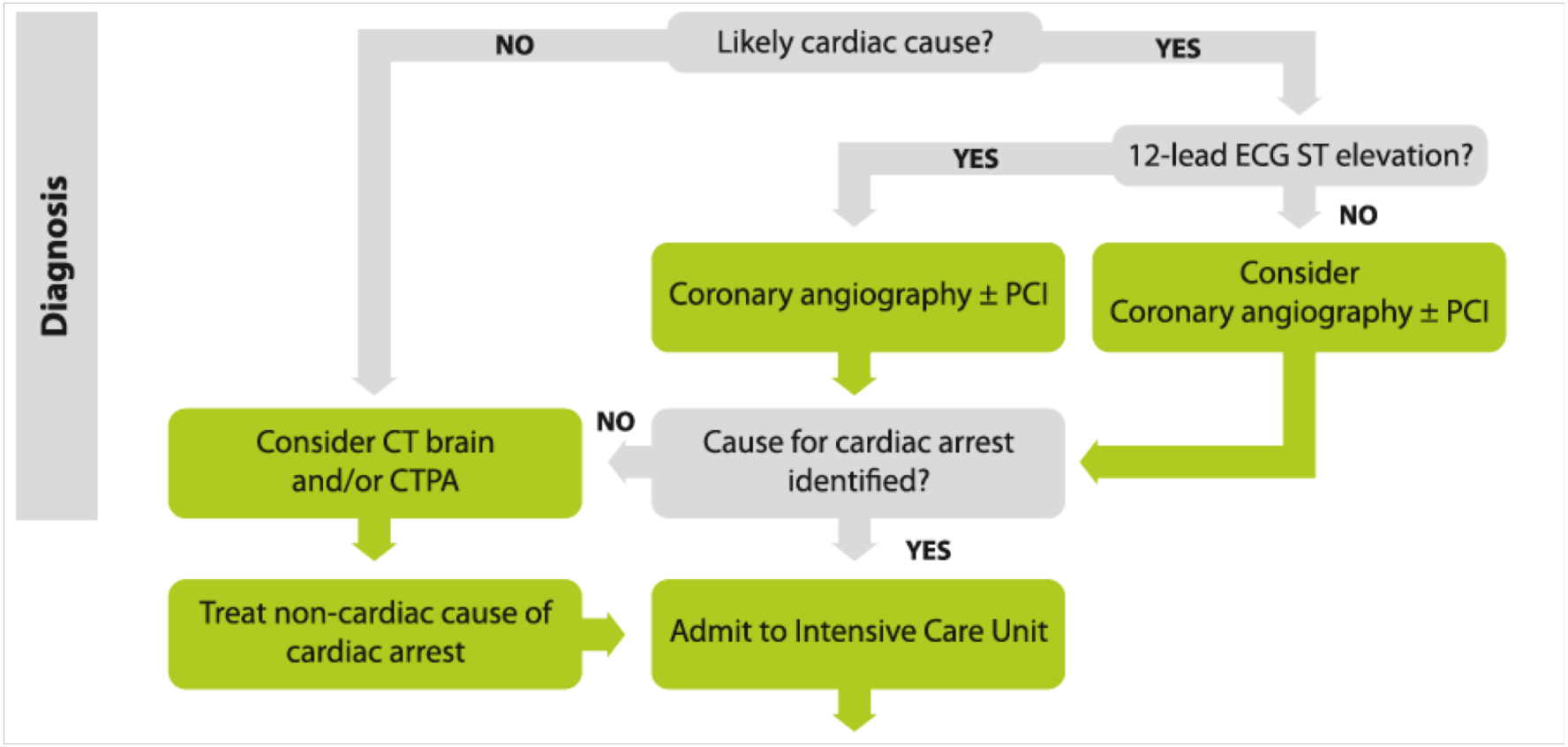
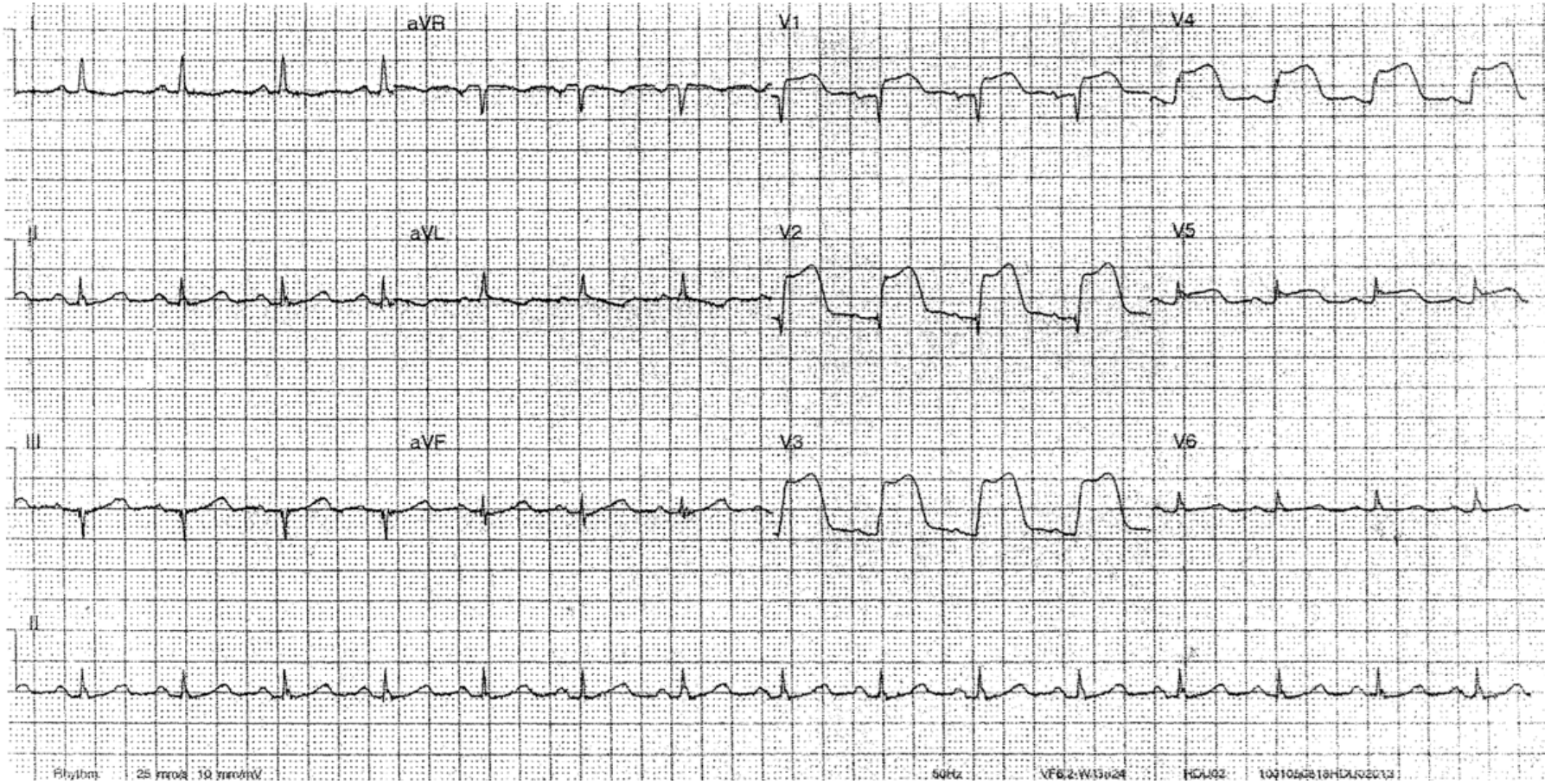
Weiterbehandlung im Spital



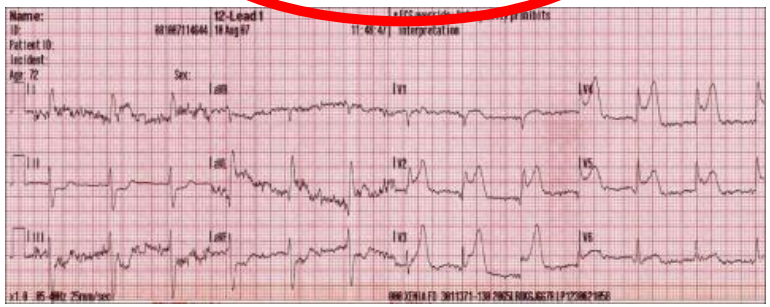

aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II

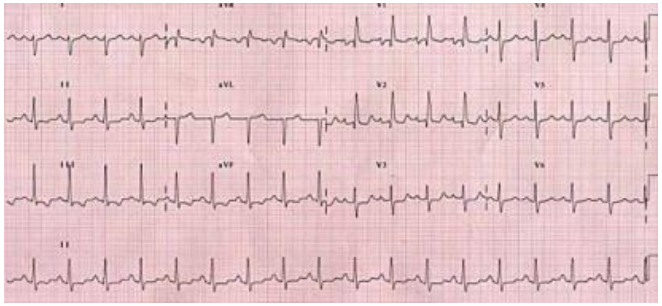
Akutes Koronarsyndrom

STEMI

NSTEMI

Instable Angina





Troponin

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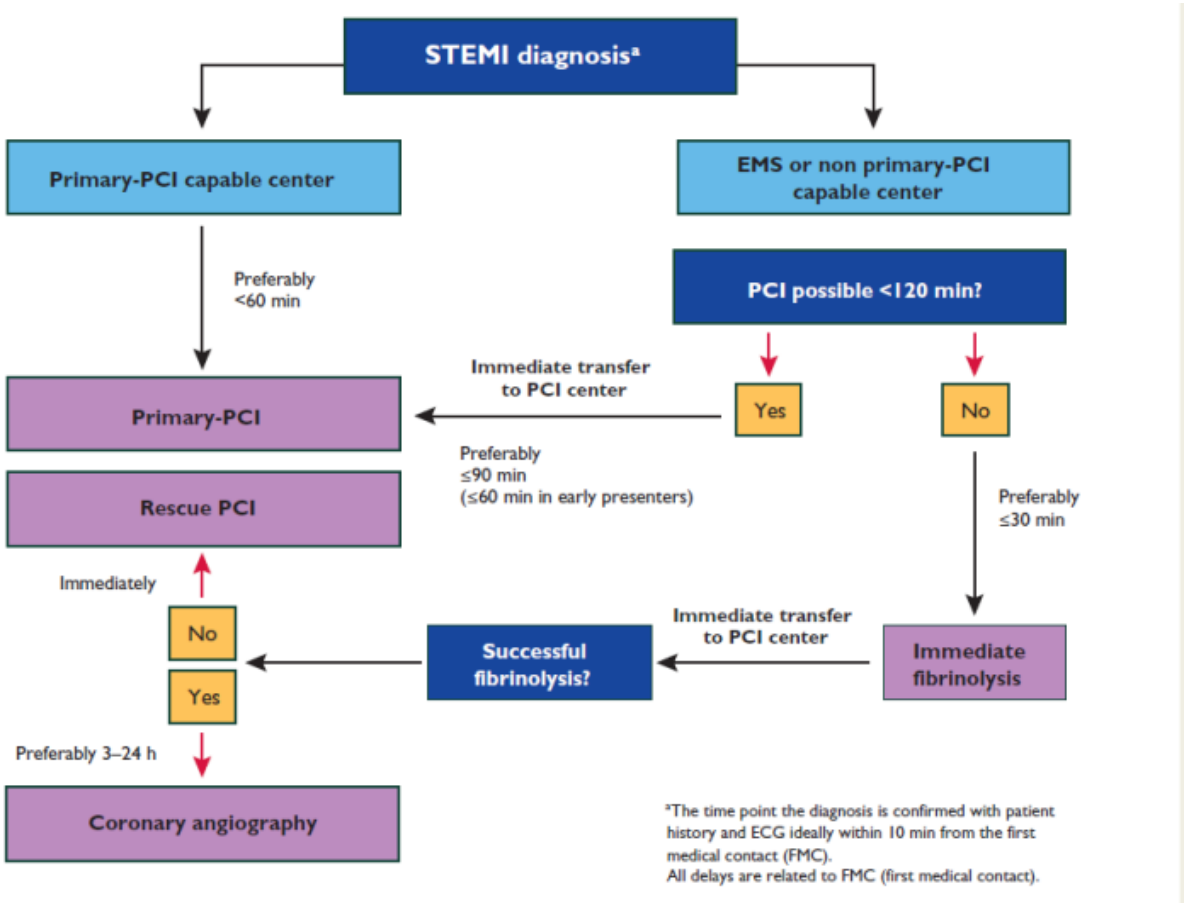
Akute Reperfusion



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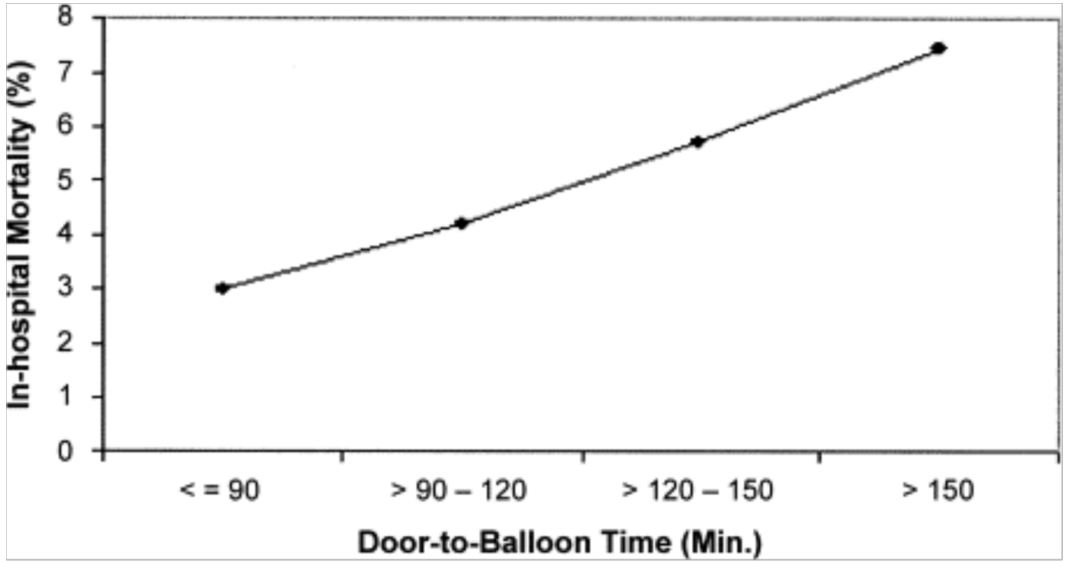
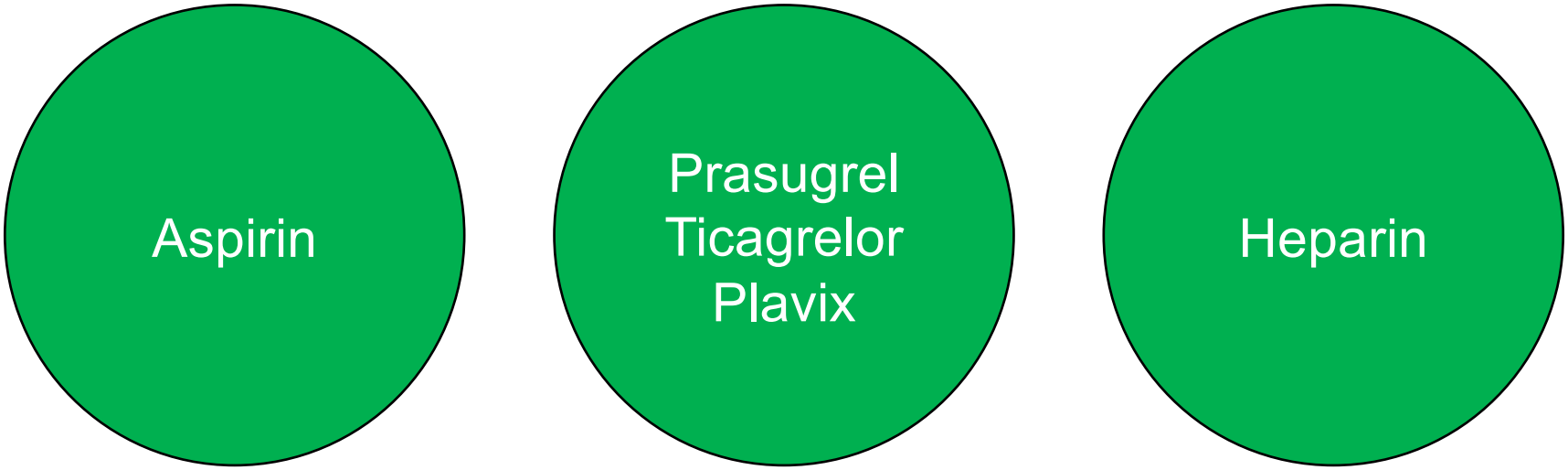
„Door to balloon time“ und Mortalität bei STEMI

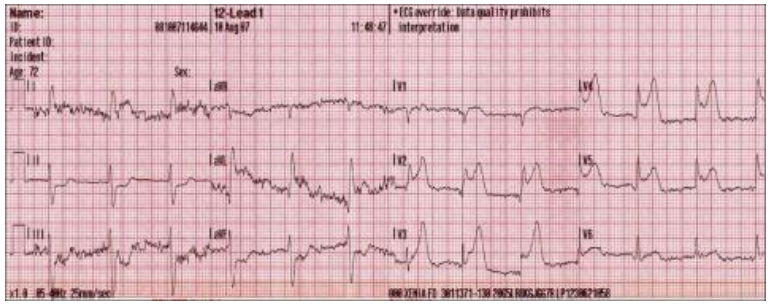


Antithrombotische Therapie



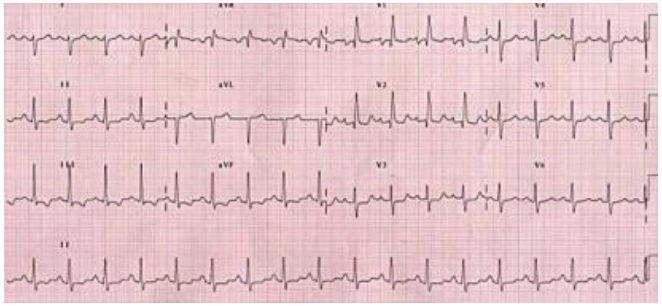
Akutes Koronarsyndrom

STEMI



NSTEMI

Instable Angina



Troponin

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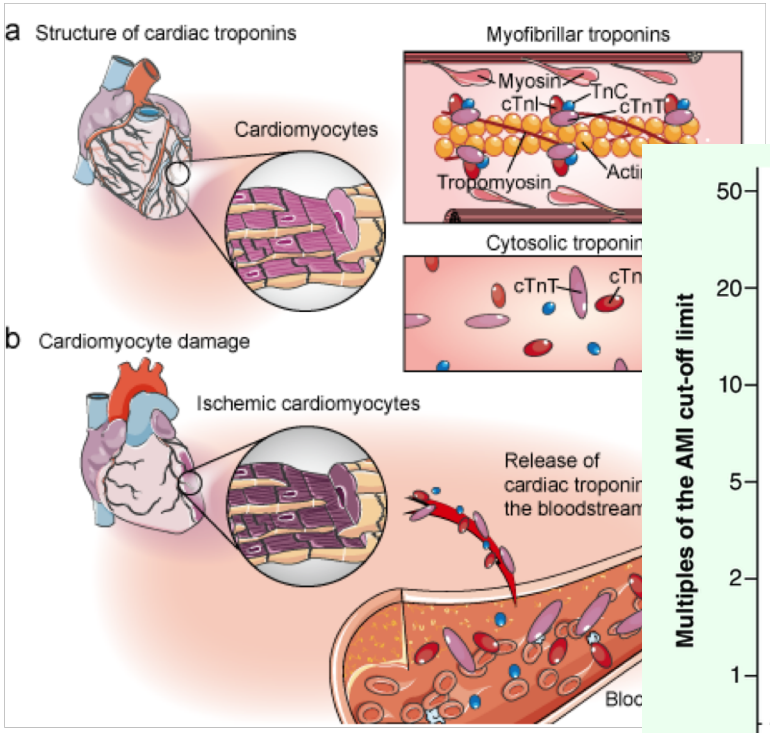
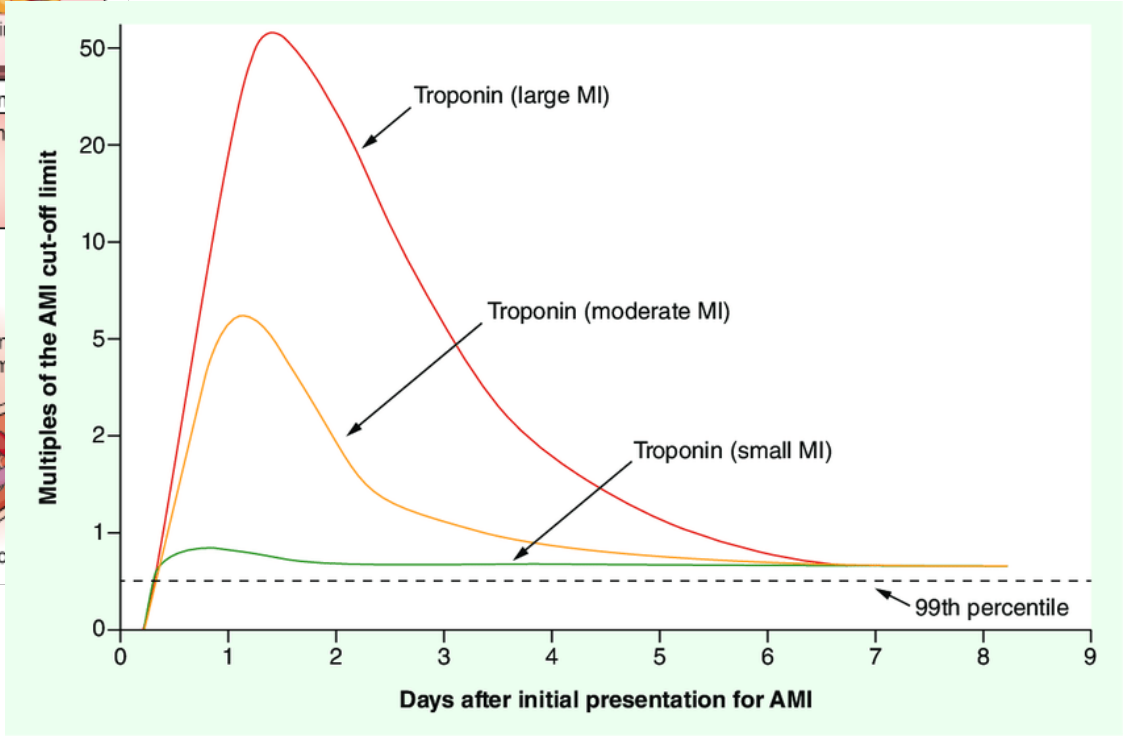
Verdacht auf NSTEMI – Die Rolle kardialer Biomarker





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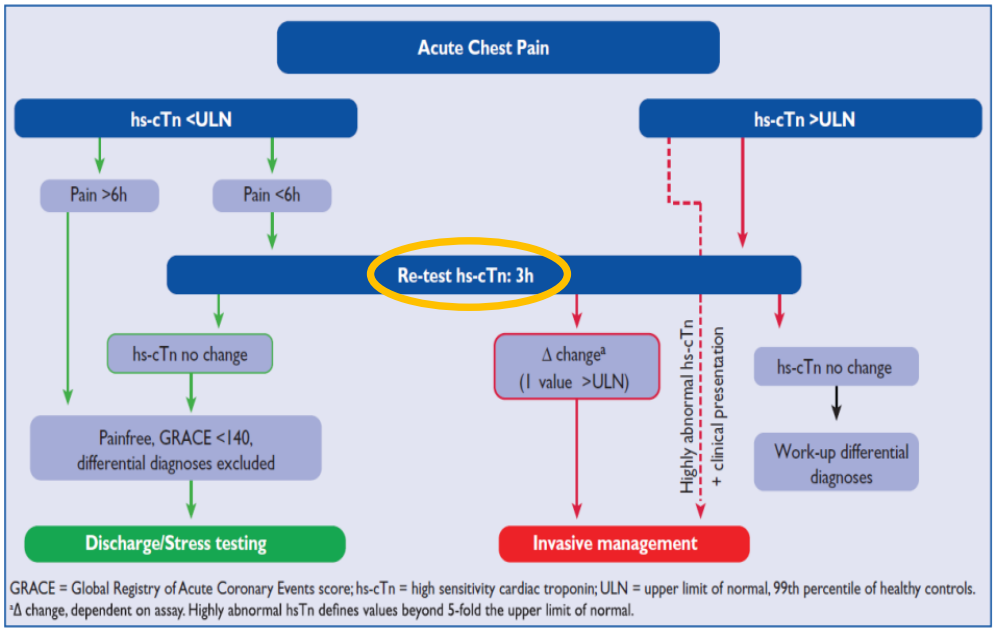
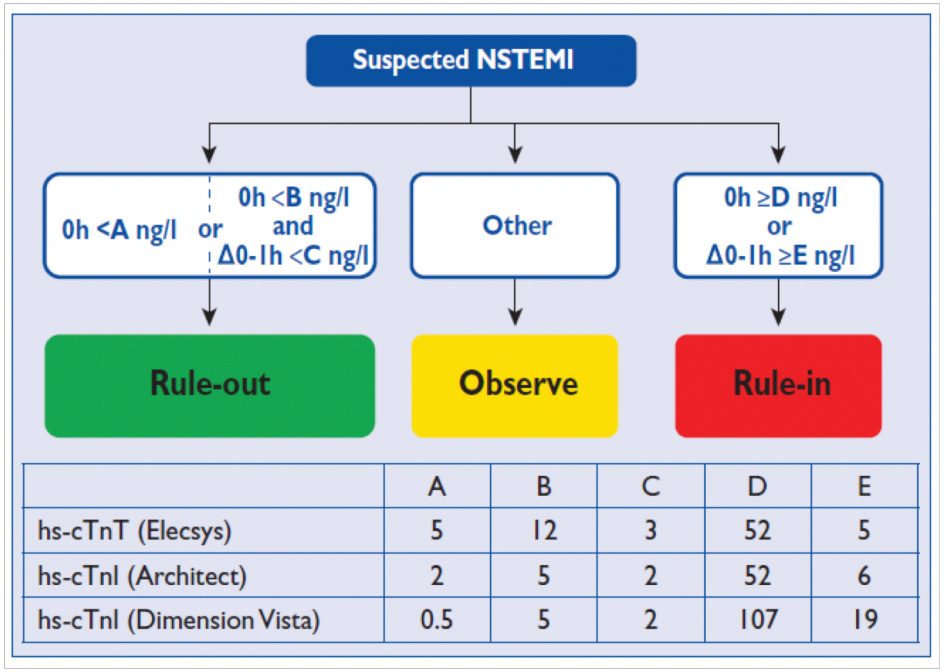
Verdacht auf NSTEMI – Diagnose mittels Biomarker 0/3h Algorithmus



Verdacht auf NSTEMI – Diagnose mittels Biomarker 0/1h Algorithmus



	A	B	C	D	E
hs-cTnT (Elecsys)	5	12	3	52	5
hs-cTnI (Architect)	2	5	2	52	6
hs-cTnI (Dimension Vista)	0.5	5	2	107	19

Invasive Behandlung (NSTEMI/UA)

Very-high-risk criteria
• Haemodynamic instability or cardiogenic shock
• Recurrent or ongoing chest pain refractory to medical treatment
• Life-threatening arrhythmias or cardiac arrest
• Mechanical complications of MI
• Acute heart failure
• Recurrent dynamic ST-T wave changes, particularly with intermittent ST-elevation
High-risk criteria
• Rise or fall in cardiac troponin compatible with MI
• Dynamic ST- or T-wave changes (symptomatic or silent)
• GRACE score >140
Intermediate-risk criteria
• Diabetes mellitus
• Renal insufficiency (eGFR <60 mL/min/1.73 m²)
• LVEF <40% or congestive heart failure
• Early post-infarction angina
• Prior PCI
• Prior CABG
• GRACE risk score >109 and <140
Low-risk criteria
• Any characteristics not mentioned above

2 Stunden

24 Stunden

72 Stunden

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Weitere Ursachen für erhöhtes Troponin

Tachyarrhythmias
Heart failure
Hypertensive emergencies
Critical illness (e.g. shock/ sepsis/ burns)
Myocarditis[a]
Tako-Tsubo cardiomyopathy
Structural heart disease (e.g. aortic stenosis)
Aortic dissection
Pulmonary embolism, pulmonary hypertension
Renal dysfunction and associated cardiac disease
Coronary spasm
Acute neurological event (e.g. stroke or subarachnoid haemorrhage)
Cardiac contusion or cardiac procedures (CABG, PCI, ablation, pacing, cardioversion, or endomyocardial biopsy)
Hypo- and hyperthyroidism
Infiltrative diseases (e.g. amyloidosis, haemochromatosis, sarcoidosis, scleroderma)
Myocardial drug toxicity or poisoning (e.g. doxorubicin, 5-fluorouracil, herceptin, snake venoms)
Extreme endurance efforts
Rhabdomyolysis


Herzkatheterlabor, 14.42 Uhr

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Fallvignette Angiologie

PD Dr. med. F. Baumann
Oberarzt Angiologie
UniversitätsSpital Zürich

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Männlich, 53 Jahre alt

Jetziges Leiden

- Notfallmässige Selbstvorstellung auf Grund akuter (seit 2 Std) Fuss Schmerzen rechtsseitig
- Zunehmende sensomotorische Einschränkung am Fuss; hat Angst
- Symptombeginn: beim Aussteigen aus dem Bus (plötzlich)

Vorerkrankungen

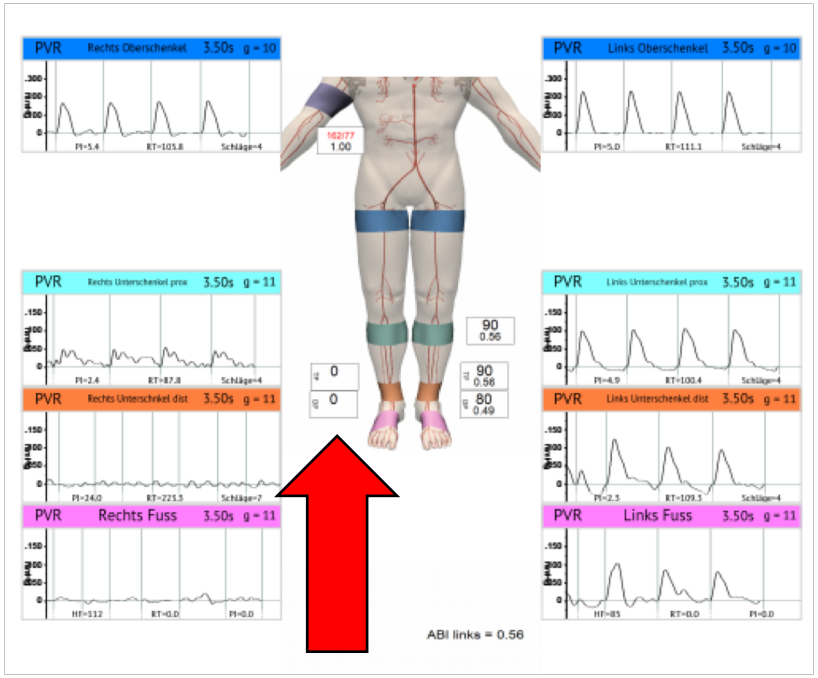
- Arterielle Hypertonie, Dyslipidämie, Adipositas (BMI 38 kg/m2), Diabetes Mellitus
- Nikotin (1 Pack/d, kumulativ 30 py)

Klinik

- Distaler Unterschenkel / Fuss rechts im Seitenvergleich: blass/livide, kühl, sensomotorisch eingeschränkt. Keine Fusspulse rechts.
- Patient beklagt starke Fuss-Schmerzen

Klinik

Oszillographie



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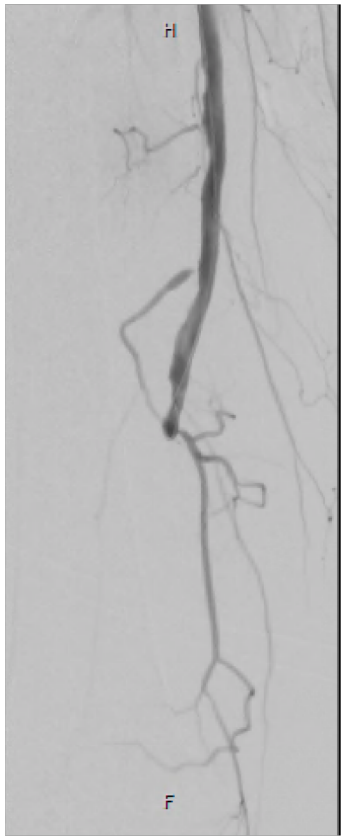
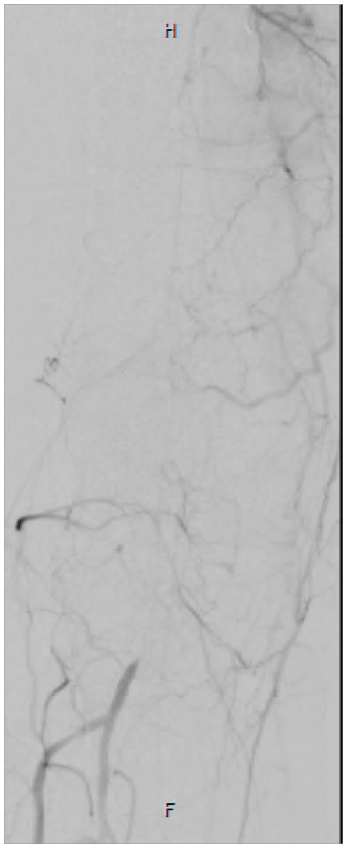
Angiographie





M, 53 yrs

Die/der Studierende soll:

- Den Schweregrad dieser Beinischämie beurteilen.
- Mögliche Aetiologien / Ursachen nennen.
- Initiale Therapie-Massnahmen (auf dem Notfall) bestimmen.
- Weiterführende diagnostische und therapeutische Verfahren formulieren.

Vielen Dank für Ihre Aufmerksamkeit!

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