



Patient Preparation and Risk Assessment

Waleed Ammar MD.
Associate professor of cardiology
Cairo University



Patient Preparation



Basic evaluation

- Careful history taking
- Clinical Examination
- Review all available investigations



Inform the patient

- Proper explanation
- Preprocedural instructions
- How to deal with his medications
- Informed written consent



Patient and Cath Lab Perparation

- ECG
- Premedications
- Review tools availability
- Haemodynamic monitoring system
- Team assignments
- Life saving measures availability (DC Shock, medication, etc.,)



Procedural monitoring

- Chest pain
- Blood pressure: cause of hypotension or damped pressure
- Anticoagulation assessment
- Allergic reactions



Allergic Reactions

- **Hypersensitivity reactions**
 - Mild: nausea & vomiting
 - Moderate: urticaria
 - Severe: anaphylaxis
- **Other Side Effects**
 - Pulmonary edema secondary to osmotic load
 - Arrhythmia



Anaphylactoid Reaction

<u>MINOR</u>	<u>MODERATE</u>	<u>SEVERE</u>
Limited urticaria	Diffuse urticaria	Cardiovascular Shock
Pruritis	Angioedema	Respiratory arrest
Erythema	Laryngeal edema ronchospasm	Cardiac arrest



Anaphylactoid Reaction: Patients at Risk

- Prior anaphylactoid reaction
- Allergic patients
 - history of atopy and asthma
 - 2 x risk for anaphylactoid reaction



Prophylaxis Regimen for Contrast Media Reactions

- Steroids
 - Prednisone 50 mg p.o. 13,7, and 1 hour before procedure
- H1 Blocker
 - Diphenhydramine 50 mg p.o. 1 hour before procedure
- H2 Blocker
 - Unclear benefit but low risk
- Low Osmolality Contrast agent

Emergency Catheterization Cases:

- Hydrocortisone 200 mg IV
- Diphenhydramine 50 mg IV



Guidelines for Management of Anaphylactic Reactions in the Cath Laboratory

- Condition: **Hypotension / Shock**
- Therapy:
 - Simultaneous administration
 - Epinephrine IV. Bolus(es) 10 mcg/min until desired BP, then infuse 1-4 mcg/min to maintain BP
 - Large volumes of NaCl 0.9% (1-3 liters in 1st hour)
 - O2 by mask, possible intubation
 - Diphenhydramine 50 mg IV
 - Hydrocortisone 400 mg IV
 - Oxymetry
- Refractory:
 - H2 blocker
 - Dopamine 2-15 mcg/kg/min IV and norepinephrine IV



Contrast Induced Nephropathy



Contrast-Induced Nephropathy

Definition: New onset or exacerbation of renal dysfunction after contrast administration in the absence of other causes:

Increase by > 25%

or

Absolute of > 0.5 mg/dl

} from baseline
serum creatinine



Occurs 24 to 48 hrs post-contrast exposure, with creatinine peaking 5 to 7 days later and normalizing within 7 to 10 days in most cases



How Prevalent and Serious is it ?

• Frequency in consecutive PCI series:

- Any renal function decline : 14.4%
- Renal failure requiring dialysis: 0.7%

McCullough, P *et al.* Am J Med 1997;103:368-75



A Simple Evaluation: Volume/Creatinine Clearance Ratio

- Creatinine clearance estimated from the Cockcroft-Gault formula

$$Ccr (ml.min) = \frac{(140-Age) \times Wt (kg)}{Cr (mg/dl) \times 72}$$

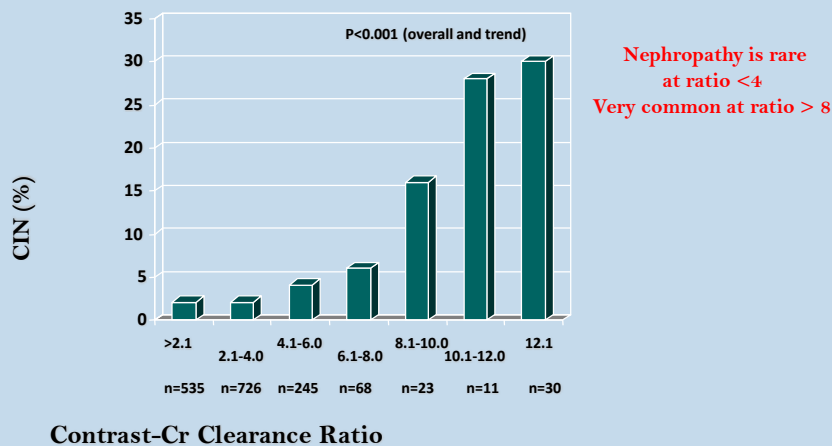
(X 0.85 for females)

- Volume / Ccr ratio = Contrast volume/ Ccr



How Does Volume/Ccr Ratio Relates to Nephropathy ?

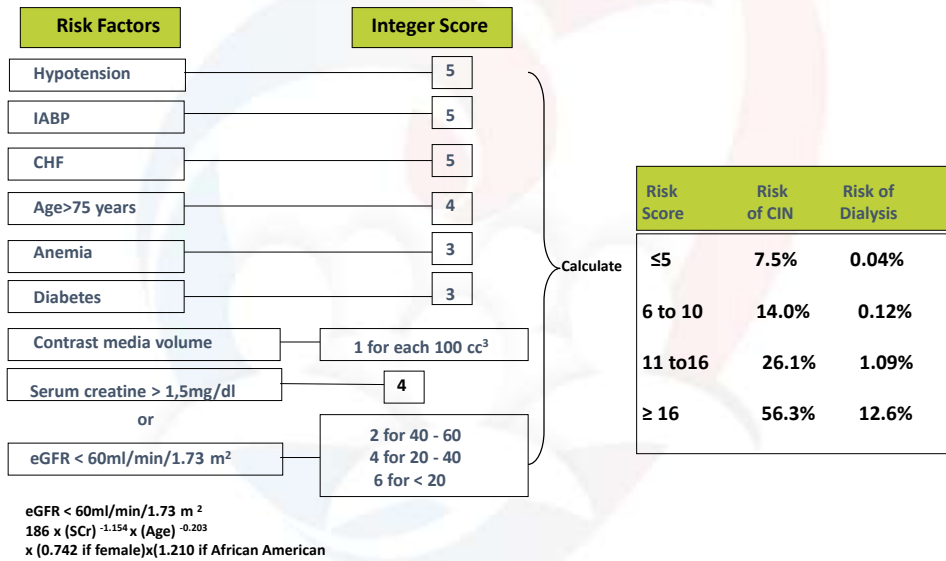
- Association between CIN and Contrast-Cr Clearance Ratio



LASKEY *et al.* (Abstr) ACC '06



Scheme to Quantify CIN Risk Score



Mehran et al. J ACC 2004;44:1393-1399



Of all the things you can do to prevent CIN, minimizing contrast agent volume and maximizing hydration are the most important



Risk assessment scores



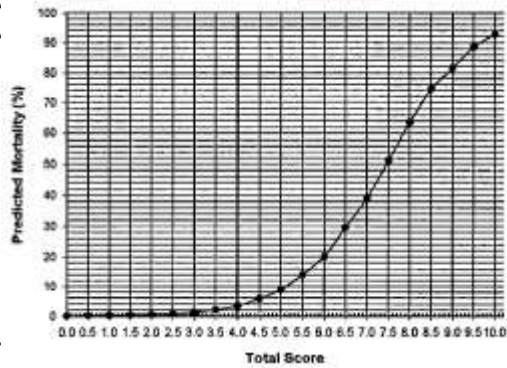
Reliable Risk Factors for in-hospital mortality

- Age.
- MI < 24h.
- Shock.
- LV function.
- Female gender.
- Lesion complexity.
- Renal failure.
- Diabetes – LM disease – proximal LAD – Urgent procedure – PVD – multivessel disease.



Model 1: in-hospital Mortality

Variable	Score
Acute MI	1
Shock	2.5
Creatinine >1.5 mg/dL	1.5
History of cardiac arrest	1.5
No. of diseased vessels	0.5
Age \geq 70 y	1.0
EF < 50%	0.5
Thrombus	0.5
PVD	0.5
Female sex	0.5
Total Score	

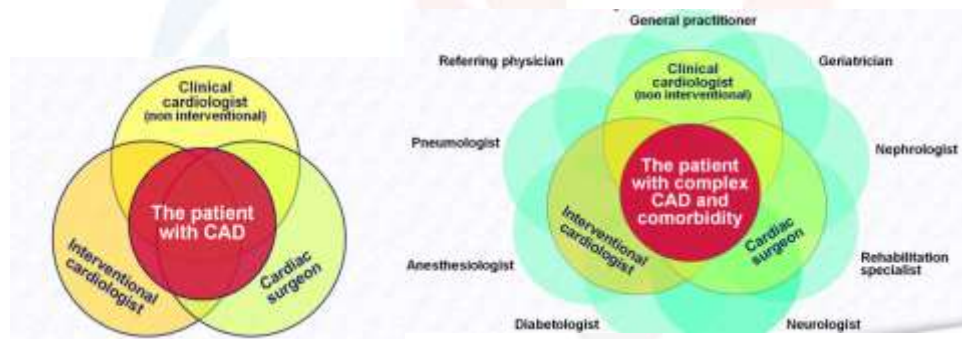


Maximum 10 pts
Add 0.5 for each diseased vessel

Moscucci *et al*, Circulation 2001



Heart Team



Clinical risk stratification for pts with STEMI : TIMI score

TIMI Risk Score for STEMI		Risk Score	Odds of death by 30D*
Historical		0	0.1 (0.1-0.2)
Age 65-74	2 points	1	0.3 (0.2-0.3)
≥ 75	3 points	2	0.4 (0.3-0.5)
DM/HTN or angina	1 point	3	0.7 (0.6-0.9)
Exam		4	1.2 (1.0-1.5)
SBP < 100	3 points	5	2.2 (1.9-2.6)
HR >100	2 points	6	3.0 (2.5-3.6)
Killip II-IV	2 points	7	4.8 (3.8-6.1)
Weight < 67 kg	1 point	8	5.8 (4.2-7.8)
Presentation		>8	8.8 (6.3-12)
Anterior STE or LBBB	1 point		
Time to rx > 4 hrs	1 point		
Risk Score = Total	(0 -14)		

*referenced to average mortality (95% confidence intervals)

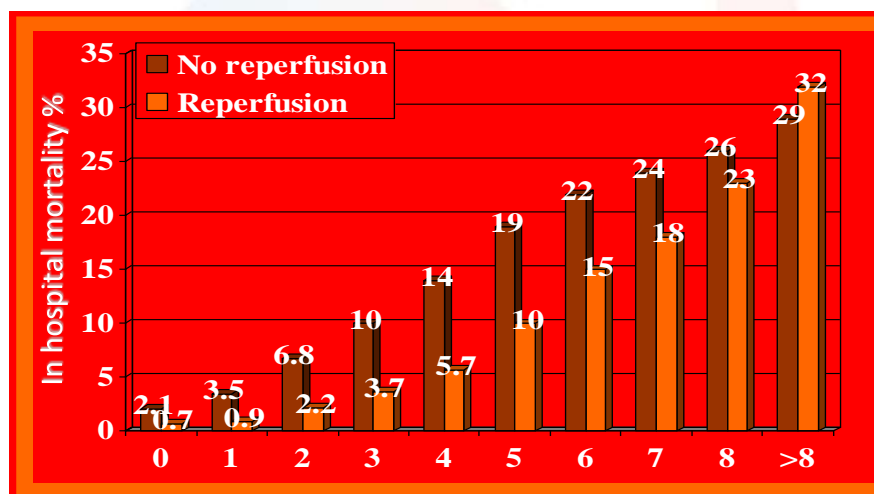
(FRONT)

(BACK)

Morrow et al, Circulation 2000




Clinical risk stratification for pts with STEMI : TIMI score



Morrow et al, Circulation 2000





GRACE
Global Registry of Acute Coronary Events

ACS Risk Model

At Admission (in-hospital/to 6 months)

Age:

HR:

SBP:

Creat.:

CHF:


At Discharge (to 6 months)

Cardiac arrest at admission

ST-segment deviation

Elevated cardiac enzymes/markers

Probability of	Death	Death or MI
In-hospital	<input type="text" value="155"/>	<input type="text" value="218"/>
To 6 months	<input type="text" value="130"/>	<input type="text" value="185"/>



Mortality in hospital and at 6 months according to the GRACE risk score

Risk category (tertile)	GRACE risk score	In-hospital death (%)
Low	≤ 108	< 1
Intermediate	109-140	1-3
High	> 140	> 3
Risk category (tertile)	GRACE risk score	Post-discharge to 6-month death (%)
Low	≤ 88	< 3
Intermediate	89-118	3-8
High	> 118	> 8

CRUSADE score of in-Hospital major bleeding

Predictor	Score	Predictor	Score	Predictor	Score
Baseline haematocrit, %		Heart rate (b.p.m.)		Prior vascular disease	
< 31	9	≤ 70	0	No	0
31-33.9	7	71-80	1	Yes	6
34-36.9	3	81-90	3	Diabetes mellitus	
37-39.9	2	91-100	6	No	0
≥ 40	0	101-110	8	Yes	6
Creatinine clearance, mL/min		111-120	10	Systolic blood pressure, mmHg	
≤ 15	39	≥ 121	11	≤ 90	10
> 15-30	35	Male	0	91-100	8
> 30-60	28	Female	8	101-120	5
> 60-90	17	Sex		121-180	1
> 90-120	7	Male	0	181-200	3
> 120	0	Female	8	≥ 201	5
		Signs of CHF at presentation			
		No	0		
		Yes	7		

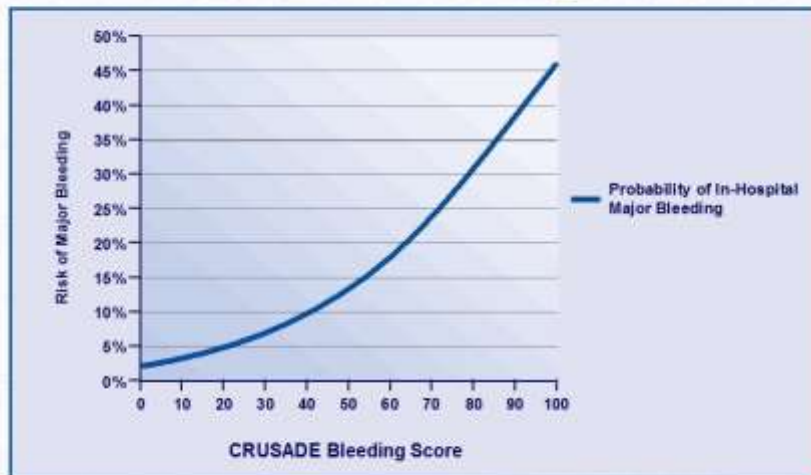
www.crusadebleedingscore.org

www.escardio.org/guidelines

European Heart Journal (2011) 32:2999-3054
doi:10.1093/eurheartj/chr236



Risk of major bleeding across the spectrum of CRUSADE bleeding score



www.escardio.org/guidelines

European Heart Journal (2011) 32:2999-3054
doi:10.1093/eurheartj/chr236



