Recommended Interpretations for Biochemical Cardiac Markers following presentation of patients with chest pain or equivalent

- Diagnosis of **ACS and AMI remains a clinical decision**.
- Access **previous CK values** in electronic record to establish individual patient baseline.
- **Serial CK (Creatine Kinase) testing** (2-4 hours apart) is required if previous baseline result is not available.
- **cTnT (Troponin T)** is preferably performed **on the second sample**, at least 4-6 hours after onset of symptoms.
- Perform confirmatory testing with CKMB or repeat cTnT only in complicated clinical situations.

Serial CK or compared to baseline.	cTnT (ug/L	**Diagnostic Considerations (if markers used)**
Rising (>20%)	>0.50	"**Consistent with acute myocardial infarction (AMI)."** Confirmatory testing is not indicated for patients with other definitive evidence of AMI. Monitor with serial CK.
	0.05 - 0.50	**"Consistent with myocardial injury."** AMI; other Coronary Syndromes (unstable angina, stable angina, minimal myocardial damage); CHF +/- ACS; Non-CAD cause of myocardial injury (sepsis, myocarditis, etc); renal disease (ESRD,CRF). Confirmatory testing is not indicated for patients with other definitive evidence of AMI.
	<0.05	**"No present evidence of myocardial injury."** If symptoms are consistent with early AMI, consider CKMB or repeat cTnT in 4 to 6 hours.
Decreasing, Flat, or Single time point	> 0.05	**"Consistent with recent or future adverse coronary event."** Late AMI; ACS; CHF +/- ACS; Non-CAD cause of myocardial injury; renal disease.
	< 0.05	**"No evidence of acute coronary event."** Repeat testing with biochemical markers is not indicated unless new symptoms develop.

CKMB interpretations: Negative (mass < 8 mg/L); Borderline (mass > 8 mg/L and Index 1.8 - 3.0 %); Positive (mass > 8 mg/L and Index > 3.0 %): (Note CKMB may be ordered instead of cTnT on second sample, especially for difficult cases).

Proposed changes to Patient Care Plans for both ED and Cardiology (August 28th, 2003)

Directions from Patient Care Plan for the Emergency Department

Low Clinical Risk,

CK CK on arrival; 2nd CK 2 - 4 hours later (a minimum of 2 hours between 1st and 2nd sample is required).
(The precision of the CK assay is very good at 1-2%CV (at 150 and 500 IU/L), and thus a significant change in the results can be detected within a short time interval).

CTnT cTnT on arrival; **only** if indicated (ie, first cTnT is negative and CK is rising) do a 2nd cTnT 4 - 6 hours later (minimum of 6 hours post onset of symptoms).
(The precision of the cTnT assay is not as good as CK during the early hours of an acute event: 30%CV at 0.02 ng/L, and 8%CV at 0.25ng/L. Thus a longer time interval between samples is required to detect a significant change).

Intermediate and High Clinical Risk

CK CK on arrival; 2nd CK 2 - 4 hours later; and 3rd CK 24 hours post onset of symptoms (a minimum of 2 hours between 1st and 2nd sample is required).
(The precision of the CK assay is very good at 1-2%CV (at 150 and 500 IU/L), and thus a significant change in the results can be detected within a short time interval).

CTnT cTnT on arrival; **only** if indicated (ie, first cTnT is negative and CK is rising) do a 2nd cTnT 4 - 6 hours later (minimum of 6 hours post onset of symptoms).
(The precision of the cTnT assay is not as good as CK during the early hours of an acute event: 30%CV at 0.02 ng/L, and 8%CV at 0.25ng/L. Thus a longer time interval between samples is required to detect a significant change).

ST Elevation MI

CK CK on arrival; 2nd CK 2 - 4 hours later; and 3rd CK 24 hours post onset of symptoms (a minimum of 2 hours between 1st and 2nd sample is required).
(The precision of the CK assay is very good at 1-2%CV (at 150 and 500 IU/L), and thus a significant change in the results can be detected within a short time interval).

CTnT cTnT on arrival; **only** if indicated (ie, first cTnT is negative and CK is rising) do a 2nd cTnT 4 - 6 hours later (minimum of 6 hours post onset of symptoms).
(The precision of the cTnT assay is not as good as CK during the early hours of an acute event: 30%CV at 0.02 ng/L, and 8%CV at 0.25ng/L. Thus a longer time interval between samples is required to detect a significant change).

Current directions in Patient care plans are:

Emergency Department

Low,

- Troponin T, 1st sample on arrival, 2nd sample 6 hours post onset of symptoms. However, a minimum of 2 hours between 1st and 2nd sample is required.
- CK, 1st sample on arrival, 2nd sample 6 hours post onset of symptoms. However, a minimum of 2 hours between 1st and 2nd sample is required.
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Intermediate and High Risk

- Troponin T, 1st sample on arrival, 2nd sample 6 hours post onset of symptoms. However, a minimum of 2 hours between 1st and 2nd sample is required.
- CK, 1st sample on arrival, 2nd sample 6 hours post onset of symptoms and then 24 hours post onset of symptoms. Note: a minimum of 2 hours between 1st and 2nd sample is required.

ST Elevation MI

- Troponin T, 1st sample on arrival, 2nd sample 6 hours post onset of symptoms, *if indicated*. Minimum of 2 hours between 1st and 2nd sample is required.
  CK, 1st sample on arrival, 2nd sample 6 hours post onset of symptoms and then 24 hours post onset of symptoms. Note: a minimum of 2 hours between 1st and 2nd sample is required.