**Table 3. Key Question 1: Outcomes**

| **Author, Year** | **Data Group** | **Test** | **ACS Definition** | **Total Sample** | **AUC** | **Values** |
| --- | --- | --- | --- | --- | --- | --- |
| Alcalai, 20074 | Age <70 and creatinine <1.13 mg/dL, cTnT >1.0 ng/mL subgroup data | Assay: cTnT  Mfg: NR  type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC |  |  | PPV: 89; 95% CI: 79 to 95 |
| Alcalai, 20074 | Age <70 and creatinine <1.13 mg/dL, cTnT 0.1-1.0 ng/mL subgroup data | Assay: cTnT  Mfg: NR  Type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC |  |  | PPV: 73; 95% CI: 65 to 80 |
| Alcalai, 20074 | Age <70 and creatinine <1.13 mg/dL, cTnT any positive result subgroup data | Assay: cTnT  Mfg: NR  type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC |  |  | PPV: 78; 95% CI: 72 to 84 |
| Alcalai, 20074 | Age <70 and creatinine >=1.13 mg/dL, cTnT >1.0 ng/mL subgroup data | Assay: cTnT  Mfg: NR  type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  adjudicated: yes  Definition: ESC/ACC |  |  | PPV: 59; 95% CI: 36 to 79 |
| Alcalai, 20074 | Age <70 and creatinine >=1.13 mg/dL, cTnT 0.1-1.0 ng/mL subgroup data | Assay: cTnT  Mfg: NR  type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC |  |  | PPV: 73; 95% CI: 65 to 80 |
| Alcalai, 20074 | Age <70 and creatinine >=1.13 mg/dL, cTnT Any positive result subgroup data | Assay: cTnT  Mfg: NR  type: NR | ICD-9 code: ICD-9  Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC |  |  | PPV: 44; 95% CI: 35 to 55 |
| Alcalai, 20074 | Age >70 and creatinine <1.13 mg/dL, cTnT >=1.0 ng/mL  subgroup data | Assay: cTnT  Mfg: NR  type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC |  |  | PPV: 90; 95% CI: 68 to 99 |
| Alcalai, 20074 | Age >70 and creatinine <1.13 mg/dL, cTnT 0.1-1.0 ng/mL  subgroup data | Assay: cTnT  Mfg: NR  type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC | NR | NR | PPV: 42; 95% CI: 31 to 54 |
| Alcalai, 20074 | Age >70 and creatinine <1.13 mg/dL, cTnT any positive result  subgroup data | Assay: cTnT  Mfg: NR  type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC | NR | NR | PPV: 52; 95% CI: 42 to 63 |
| Alcalai, 20074 | Age >70 and creatinine >=1.13 mg/dL, cTnT >1.0 ng/mL  subgroup data | Assay: cTnT  Mfg: NR  type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC | NR | NR | PPV: 59; 95% CI: 43 to 73 |
| Alcalai, 20074 | Age >70 and creatinine >=1.13 mg/dL, cTnT 0.1-1.0 ng/mL  subgroup data | Assay: cTnT  Mfg: NR  type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC | NR | NR | PPV: 27; 95% CI: 20 to 37 |
| Alcalai, 20074 | Age >70 and creatinine >=1.13 mg/dL, cTnT any positive result  subgroup data | Assay: cTnT  Mfg: NR  type: NR  cut off normal: 0.1 mcg/L  timing: NR  99th upper ref: NR | Adjudicated by: panel of 2 cardiologists  Definition: ESC/ACC | NR | NR | PPV: 37; 95% CI: 29 to 45 |
| Apple, 19996 | Total sample | Assay: cTnI  Mfg: other  Mfg: BioSite Diagnostics  type: other  type: Triage Cardiac Panel  cut off normal: 0.4 mcg/L  timing: samples taken every 8 hours for 24 hours  99th upper ref: 0.4 mcg/L | NR | NR | AUC: 0.961; 95% CI: 0.931 to 0.979 | AUC: 0.961; 95% CI: 0.931 to 0.979 |
| Bhagavan, 199816 | subgroup data | Assay: cTnI  Mfg: other  Mfg: Baxter  type: Stratus  cut off normal: 0.6 mcg/L  timing: every 8 hours at and after admission  99th upper ref: NR | NR | NR | NR | Sens: 90  Spec: 81  NPV: 98 |
| Chenevier-Gobeaux, 2013127 | Total sample | Assay: hs cTnT  Mfg: Roche  type: Elecsys  cut off normal: 14.0 ng/L timing: NR  99th upper ref: 14 ng/L | Adjudicated by: panel of 2 cardiologist Definition: global mi | 75 | NR | NR |
| Chenevier-Gobeaux, 2013127 | Total sample | Assay: hs cTnT  Mfg: Roche  type: Elecsys  cut off normal: 35.8 ng/L timing: NR  99th upper ref: 14 mg/L | Adjudicated by: panel of 2 cardiologist Definition: global mi | 75 | NR | NR |
| Chenevier-Gobeaux, 2013127 | Total sample | Assay: hs cTnT  Mfg: Roche  type: Elecsys  cut off normal: 14.0 ng/L timing: NR  99th upper ref: 14 ng/L | Adjudicated by: panel of 2 cardiologist Definition: global mi | 72 | NR | NR |
| Chenevier-Gobeaux, 2013127 | Total sample | Assay: hs cTnT  Mfg: Roche  type: Elecsys  cut off normal: 43.2 ng/L timing: NR  99th upper ref: 14 ng/L | Adjudicated by: panel of 2cardiologist Definition: global mi | 72 | NR | NR |
| Fehr, 200334 | ACS, cTnI subgroup data | Assay: cTnI  Mfg: DPC  type: Immulite  cut off normal: 1 mcg/L  timing: beginning of hemodialysis session  99th upper ref: NR | NR | NR | NR | Sens: 45  Spec: 100 |
| Fehr, 200334 | ACS, cTnTsubgroup data | Assay: cTnT  Mfg: Roche  type: Elecsys  cut off normal: 0.1 mcg/L  timing: Beginning of hemodialysis session  99th upper ref: NR | NR | NR | NR | Sens: 100  Spec: 42 |
| Flores, 200637 | Total sample | Assay: cTnI  Mfg: Beckman  type: Access  cut off normal: 0.5 ng/mL  timing: NR | NR | NR | NR | FP: 20  Sens: 70;  95% CI: 57 to 83  Spec: 92;  95% CI: 90 to 95  PPV: 51;  95% CI: 39 to 63  NPV: 97;  95% CI: 95 to 98 |
| Flores-Solis, 201238 | NR | Assay: cTnI  Mfg: other  Mfg:  type: other  type: Vidas  cut off normal: 0.11 ng/mL other  timing: other  timing: Upon hospitalization and 6 months follow-up  99th upper ref: 0.01 ng/mL | Definition: European Society for Cardiology 2007 | NR | AUC: 0.83;  95% CI: 0.76 to 0.9 | TP: 36  FP: 53  FN: 20  TN: 367  Sens: 0.64  Spec: 0.87  PPV: 0.4  NPV: 0.95  AUC: 0.83;  95% CI: 0.76 to 0.9 |
| Flores-Solis, 201238 | NR | Assay: cTnI  Mfg: Beckman  type: Access  cut off normal: 0.50 ng/mL  timing: Upon hospitalization and 6 months followup  99th upper ref:: 0.04 ng/mL | Definition: European Society for Cardiology 2007 | 484 | AUC: 0.85;  95% CI: 0.91 to 0.78 | TP: 24  FP: 24  FN: 32  TN: 403  Sens: 0.43  Spec: 0.94  PPV: 0.5  NPV: 0.93  AUC: 0.85;  95% CI: 0.91 to 0.78 |
| Haaf, 201343 | Total sample | Assay: hs cTnT  Mfg: Roche  type: elecsys  cut off normal: 19.4 ng/L  timing: NR  99th upper ref: 14 ng/L | Adjudicated by: panel of 3 cardiologist Definition: J. Am. Coll. Cardiol | NR | NR | NR |
| Haaf, 201343 | Total sample | Assay: hs cTnI  Mfg: Beckman  type: Access  cut off normal: 9.9 ng/L timing: NR  99th upper ref: 9 ng/L | Adjudicated by: panel of 3 cardiologist Definition: J. Am. Coll. Cardiol | NR | NR | NR |
| Haaf, 201343 | Total sample | Assay: hs cTnI  Mfg: Siemens  type: NR  cut off normal: 6.3 ng/L timing: NR  99th upper ref: 9 ng/L | Adjudicated by: panel of 3 cardiologist Definition: J. Am. Coll. Cardiol | NR | NR | NR |
| Haaf, 201343 | Total sample | Assay: cTnT  Mfg: Roche  type: Elecsys  cut off normal: 9 ng/L  timing: NR  99th upper ref: 0.01 mcg/ L | Adjudicated by: panel of 3 cardiologist Definition: J. Am. Coll. Cardiol | NR | NR | NR |
| Ikeda, 200262 | Total sample | Assay: cTnI  Mfg: other  cut off normal: 0.8ng/ml  99th upper ref: NR | Adjudicated by: NS  cardiologist adjudicated: NR  Definition: NR | NR | NR | NR |
| Ikeda, 200262 | Total sample | Assay: cTnT  cut off normal: 0.16ng/ml 99th upper ref: NR | Adjudicated by: NS  cardiologist adjudicated: NR  Definition: NR | NR | NR | NR |
| Martin, 199883 | Total sample | Assay: cTnI  Mfg: Dade-Behring  type: Stratus  cut off normal: 0.8 mcg/L  timing: 48 hours after admission  99th upper ref: NR | NR | NR | NR | Sens: 94;  95% CI: 82 to 106  Spec: 100  PPV: 100  NPV: 94 |
| McCullough, 200284 | End-stage renal disease on dialysis subgroup data | Assay: cTnI  Mfg: other  Mfg: Biosite Incorporated  type: other  type: Triage Cardiac System Package Insert  cut off normal: 0.4 mcg/L  timing: 9 hrs after onset  99th upper ref: NR | Adjudicated by: Panel of 2 cardiologists  Definition: Thrombolysis in Myocardial Infarction Study Group | NR | AUC: 0.99  SD: 0.01 | AUC: 0.99  SD: 0.01 |
| McCullough, 200284 | Quartile 1 >99.4 mL/min/72kgsubgroup data | Assay: cTnI  Mfg: other  Mfg: Biosite Incorporated  Type: other  Type: Triage Cardiac System Package Insert  cut off normal: 0.4 mcg/L  timing:9 hrs after onset  99th upper ref: NR | Adjudicated by: Panel of 2 cardiologists  Definition: Thrombolysis in Myocardial Infarction Study Group | NR | AUC: 0.93  SD: 0.04 | AUC: 0.93  SD: 0.04 |
| McCullough, 200284 | Quartile 1 >99.4 mL/min/72kg subgroup data | Assay: cTnI  Mfg: other  Mfg: Biosite Incorporated  type: other  type: Triage Cardiac System Package Insert  cut off normal: 0.4 mcg/L  timing:9 hrs after onset  99th upper ref: NR | Adjudicated by: Panel of 2 cardiologists  Definition: Thrombolysis in Myocardial Infarction Study Group | NR | AUC: 1  SD: 0 | AUC: 1  SD: 0 |
| McCullough, 200284 | Quartile 2: 99.3-72.7 mL/min/72kg subgroup data | Assay: cTnI  Mfg: other  Mfg: Biosite Incorporated  type: other  type: Triage Cardiac System Package Insert  cut off normal: 0.4 mcg/L  timing: 9 hrs after onset  99th upper ref: NR | Adjudicated by: Panel of 2 cardiologists  Definition: Thrombolysis in Myocardial Infarction Study Group | NR | AUC: 0.94  SD: 0.02 | AUC: 0.94  SD: 0.02 |
| McCullough, 200284 | Quartile 3: 72.8-47.0mL/min/72kg subgroup data | Assay: cTnI  Mfg: other  Mfg: Biosite Incorporated  type: other  type: Triage Cardiac System Package Insert  cut off normal: 0.4 mcg/L  timing: 9 hrs after onset  99th upper ref: NR | Adjudicated by: Panel of 2 cardiologists  Definition: Thrombolysis in Myocardial Infarction Study Group Study Group | NR | AUC: 0.97  SD: 0.01 | AUC: 0.97  SD: 0.01 |
| Noeller, 200391 | Age <65 subgroup data | Assay: cTnT  Mfg: Roche  type: CARDIAC-ELISA ES300  cut off normal: 0.1 mcg/L  timing: 16 hrs after onset  99th upper ref: NR | NR | NR | NR | Sens: 45  Spec: 94  PPV: 77  NPV: 78 |
| Noeller, 200391 | Age >=65 subgroup data | Assay: cTnT  Mfg: Roche  type: CARDIAC-ELISA ES300  cut off normal: 0.1 mcg/L  timing: 16 hrs after onset  99th upper ref: NR | Definition: ICD-9 code | NR | NR | Sens: 44  Spec: 83  PPV: 62  NPV: 71 |
| Noeller, 200391 | Creatinine <1.5 mg/dL, age <65  subgroup data | Assay: cTnT  Mfg: Roche  type: CARDIAC-ELISA ES300  cut off normal: 0.1 mcg/L  timing: 16 hrs after onset  99th upper ref: NR | Definition: ICD-9 code | NR | NR | Sens: 45  Spec: 96  Negative LR: 83  PPV: 78 |
| Noeller, 200391 | Creatinine <1.5 mg/dL, age >=65  subgroup data | Assay: cTnT  Mfg: Roche  type: CARDIAC-ELISA ES300  cut off normal: 0.1 mcg/L  timing: 16 hrs after onset  99th upper ref: NR | Definition: ICD-9 code | NR | NR | Sens: 41  Spec: 89  PPV: 69  NPV: 71 |
| Noeller, 200391 | Creatinine >=1.5 mg/dL, age <65  subgroup data | Assay: cTnT  Mfg: Roche  type: CARDIAC-ELISA ES300  cut off normal: 0.1 mcg/L  timing: 16 hrs after onset  99th upper ref: NR | Definition: ICD-9 code | NR | NR | Sens: 43  Spec: 69  PPV: 38  NPV: 73 |
| Noeller, 200391 | Creatinine >=1.5 mg/dL, age >=65  subgroup data | Assay: cTnT  Mfg: Roche  type: CARDIAC-ELISA ES300  cut off normal: 0.1 mcg/L  timing: 16 hrs after onset  99th upper ref: NR | Definition: ICD-9 code | NR | NR | Sens: 52  Spec: 66  PPV: 48  NPV: 69 |
| Roppolo, 1999102 | cTnI >0.5 ng/mL  subgroup data | Assay: cTnI  Mfg: Dade-Behring  type: Opus  cut off normal: 0.5 mcg/L  timing: 1 week before admission  99th upper ref: NR | Definition: ECG changes, wall motion abnormality by multigated angiogram; echocardiography, angiography or autopsy | NR | NR | Sens: 50; 95% CI: 10 to 90  Spec: 100  PPV: 100  NPV: 93.5;  95% CI: 86.4 to 100 |
| Roppolo, 1999102 | cTnT >0.1 ng/mL  subgroup data | Assay: cTnT  Mfg: Dade-Behring  type: Opus  cut off normal: 0.1 mcg/L  timing: 1 week before admission  99th upper ref: NR | Definition: ECG changes, wall motion abnormality by multigated angiogram; echocardiography, angiography or autopsy | NR | NR | Sens: 100  Spec: 55.8; 95% CI: 5.3 to 100  PPV: 24;  95% CI: 7.6 to 40.4  NPV: 100 |
| Roppolo, 1999102 | cTnT >0.2 ng/mL  subgroup data | Assay: cTnT  Mfg: Dade-Behring  type: Opus  cut off normal: 0.2 mcg/L  timing: 1 week before admission  99th upper ref: NR | Definition: ECG changes, wall motion abnormality by multigated angiogram; echocardiography, angiography or autopsy | NR | NR | Sens: 83.3; 95% CI: 53.5 to 100  Spec: 90;  95% CI: 82 to 99.4  PPV: 55.6; 95% CI: 23.1 to 88.1  NPV: 97.5;  95% CI: 92.7 to 100 |
| Sukonthasarn, 2007113 | CrCl <15ml/min/1.73m2  subgroup data | Assay: cTnT  Mfg: Roche  type: Elecsys  cut off normal: 0.1 mcg/L  timing: 24 hours after admission  99th upper ref: NR | Definition: European Society of Cardiology | NR | AUC: 0.645 | Sens: 85.71  Spec: 48  AUC: 0.645 |
| Sukonthasarn, 2007113 | CrCl <60ml/min/1.73m2, except hemodialysis  subgroup data | Assay: cTnT  Mfg: Roche  type: Elecsys  cut off normal: 0.1 mcg/L  timing: 24 hours after admission  99th upper ref: NR | Definition: European Society of Cardiology | NR | AUC: 0.976 | Sens: 91.3  Spec: 100  AUC: 0.976 |
| Sukonthasarn, 2007113 | CrCl <60ml/min/1.73m2  subgroup data | Assay: cTnT  Mfg: Roche  type: Elecsys  cut off normal: 0.1 mcg/L  timing: 24 horus after admission  99th upper ref: NR | Definition: European Society of Cardiology | NR | AUC: 0.94 | Sens: 90.9  Spec: 84.5  AUC: 0.94 |
| Sukonthasarn, 2007113 | CrCl 15-29 ml/min/1.73m2 subgroup data | Assay: cTnT  Mfg: Roche  type: Elecsys  cut off normal: 0.1 mcg/L  timing: 24 hours after admission  99th upper ref: NR | Definition: European Society of Cardiology | NR | AUC: 0.987 | Sens: 97.5  Spec: 92.9  AUC: 0.987 |
| Sukonthasarn, 2007113 | CrCl 15-59 ml/min/1.73m2  subgroup data | Assay: cTnT  Mfg: Roche  type: Elecsys  cut off normal: 0.1 mcg/L  timing: 24 hours after admission  99th upper ref: NR | Definition: European Society of Cardiology | NR | AUC: 0.983 | Sens: 100  Spec: 96.6  AUC: 0.983 |
| Sukonthasarn, 2007113 | CrCl 30-59 ml/min/1.73m2  subgroup data | Assay: cTnT  Mfg: Roche  type: Elecsys  cut off normal: 0.1 mcg/L  timing: 24 hours after admission  99th upper ref: NR | Definition: European Society of Cardiology | NR | AUC: 0.987 | Sens: 90  Spec: 96.8  AUC: 0.987 |
| Sukonthasarn, 2007113 | Group 2: Renal insufficiency on dialysis subgroup data | Assay: cTnI  Mfg: other  Mfg: Accu  type: Access  cut off normal: 0.1 ng/mLtiming: 8 hour intervals after admission  99th upper ref: NR | Definition: ICD-9 code | 32 | NR | TP: 19  FP: 1  FN: 5  TN: 7  Sens: 73%;  95% CI: 98 to 55  Spec: 83%;  95% CI: 120 to 70 |
| Troyanov, 2005116 | Total sample | Assay: cTnI  Mfg: other  Mfg: AxSYM  type: other  type: MEIA  cut off normal: 0.3 mcg/L  timing: NR  99th upper ref: 1 mcg/L | NR | 101 | NR | Spec: 99% |
| Troyanov, 2005116 | Total sample | Assay: cTnT  Mfg: Roche  type: Elecsys  cut off normal: 0.4 mcg/L  timing: NR  99th upper ref: 0.1 mcg/L | Definition: ICD-9 code | 101 | NR | Sens: 84% |

ACS=acute coronary syndrome; AUC=area under the curve; CI=confidence interval; CrCl=creatinine clearance; cTnI=cardiac troponin I; cTnT=cardian troponin T; ECG=electrocardiography; hrs=hours; ESC/ACC= European Society of Cardiology/American College of Cardiology; FN=false negative; FP=false positive; hs=high sensitivity; J.Am.Coll.Cardio=journal of american college of cardiology; ICD=international classification of diseases; kg=kilograms; LR=likelihood ratio; mcg/L=micrograms per liter; mg/dL=milligrams per liter; MI=myocardial infarction; ml/min=milliliters per minute; N=number; ng/mL=nanograms per liter; ng/L=nanograms per liter; NPV=negative predictive value; NR=not reported; PPV=positive predictive value; ref=reference; SD=standard deviation; sens=sensitivity; spec=specificity; TN=true negative; TP=true positive