

## References

1. Heart attack and stroke: signals an action. Am Heart Assoc Dallas, TX, 1992.
2. Tierney WM, Fitzgerald J, McHenry R, Roth BJ, Psaty B, Stump DL, Anderson FK. Physicians' estimates of the probability of myocardial infarction in emergency room patients with chest pain. Med Decis Making 1986;6:12-7.
3. Ryan TJ, Anderson JL, Antman EM, Braniff BA, Brooks NH, Califf RM, et al. ACC/AHA guidelines for the management of patients with acute myocardial infarction. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Committee on Management of Acute Myocardial Infarction). J Am Coll Cardiol 1996;28:1328-428.
4. The Cardiology Roundtable. Perfecting MI ruleout. Best practices for emergency evaluation of chest pain. Washington, DC: The Advisory Board Co., 1994:15 pp.
5. Pozen MW, D'Agostino RB, Selker HP, Sytkowski PA, Hood WB Jr. A predictive instrument to improve coronary-care unit admission practices in acute ischemic heart disease. A prospective multicenter clinical trial. N Engl J Med 1984;310:1273-8.
6. Tierney WM, Fitzgerald J, McHenry R, Roth BJ, Psaty B, Stump DL, Anderson FK. Physicians' estimate of the probability of myocardial infarction in emergency room patients with chest pain. Med Dec Making 1986;12-7.
7. Lee TH, Weisberg MC, Cook EF, Daley K, Brand DA, Goldman L. Evaluation of creatine kinase and creatine kinase-MB for diagnosing myocardial infarction. Clinical impact in the emergency room. Arch Intern Med 1987;147:115-21.
8. Rouan GW, Hedges JR, Toltzis R, Goldstein-Wayne B, Brand D, Goldman L. A chest pain clinic to improve the follow-up of patients released from an urban university teaching hospital emergency department. Ann Emerg Med 1987;16:1145-50.

9. McCarthy BD, Beshansky JR, D'Agostino RB, Selker HP. Missed diagnoses of acute myocardial infarction in the emergency department: results from a multicenter study. *Ann Emerg Med* 1993;22:579-82.
10. Puleo PR, Meyer D, Wathen C, Tawa CB, Wheeler S, Hamburg RJ, et al. Use of a rapid assay of subforms of creatine kinase-MB to diagnose or rule out acute myocardial infarction. *N Engl J Med* 1994;331:561-6.
11. Graff LG, Dallara J, Ross MA, Joseph AJ, Itzcovitz J, Andelman RP, et al. Impact on the care of the emergency department chest pain patient from the chest pain evaluation registry (CHEPER) study. *Am J Cardiol* 1997;80:563-8.
12. Lee TH, Rouan GW, Weisberg MC, Brand DA, Acampora D, Stasiulewicz C, et al. Clinical characteristics and natural history of patients with acute myocardial infarction sent home from the emergency room. *Am J Cardiol* 1987;60:219-24.
13. Lewas S. Paradox, process and perception: the role of organizations in clinical practice guidelines development. *Can Med Assoc J* 1995;153:1073-7.
14. Cohn PF. *Silent myocardial ischemia and infarction*, 2nd ed. New York: Marcel Dekker, 1989:1-3.
15. Adams JE, Abendschein DR, Jaffe AS. Biochemical markers of myocardial injury: is MB creatine kinase the choice for the 1990s? *Circulation* 1993;88:750-63.
16. Apple FS, Preese LM, Panteghini M, Vaidya HC, Bodor GS, Wu AHB. Markers for myocardial injury. *J Clin Immunoassay* 1994;17:6-48.
17. Ohman EM, Casey C, Bengston JR, Pryor D, Tormey W, Horgan JH. Early detection of acute myocardial infarction: additional information from serum concentration of myoglobin in patients without ST elevation. *Br Heart J* 1990;63:335-8.
18. Hamilton RW, Hopkins MB, Shihabi ZK. Myoglobinuria, hemoglobinuria, and acute renal failure [Clinical Conference]. *Clin Chem* 1989;35:1713-20.

19. Missov E, Calzolari C, Pau B. Circulating cardiac troponin I in severe congestive heart failure. *Circulation* 1997;96:2953-8.
20. Hamm CW, Goldmann BU, Heeschen C, Kreyman G, Berger J, Meinertz T. Emergency room triage of patients with acute chest pain by means of rapid testing for cardiac troponin T or troponin I. *N Engl J Med* 1997;337:1648-53.
21. Zimmerman J, Fromm R, Meyer D, Boudreaux A, Wun CCC, Smalling R, et al. Diagnostic marker cooperative study for the diagnosis of myocardial infarction. *Circulation* 1999;99:1671-7.
22. Katus HA, Remppis A, Neumann FJ, Scheffold T, Diederich KW, Vinar G, et al. Diagnostic efficiency of troponin T measurements in acute myocardial infarction. *Circulation* 1991;83:902-12.
23. Jaffe AS, Landt Y, Parvin CA, Abendschein DR, Geltman EM, Ladenson JH. Comparative sensitivity of cardiac troponin I and lactate dehydrogenase isoenzymes for diagnosis of acute myocardial infarction. *Clin Chem* 1996;42:1770-6.
24. Hafner G, Thome-Kromer B, Schaube J, Kupferwasser I, Ehrenthal W, Cummins P, et al. Cardiac troponins in serum in chronic renal failure [Letter]. *Clin Chem* 1994;40:1790-1.
25. Li D, Jialal I, Keffer J. Greater frequency of increased cardiac troponin T than increased cardiac troponin T in patients with chronic renal failure [Letter]. *Clin Chem* 1996;42:114-5.
26. Wu AHB, Feng YJ, Roper E, Herbert C, Schweizer R. Cardiac troponins T and I before and after renal transplantation [Letter]. *Clin Chem* 1997;43:411-2.
27. Apple FS, Sharkey SW, Hoefft P, Skeate R, Boss E, Dahlmeier BA, Preese LM. Prognostic value of serum cardiac troponin I and T in chronic dialysis patients: a 1-year outcomes analysis. *Am J Kidney Dis* 1997;29:399-403.

28. Bodor GS, Servant L, Voss EM, Smith S, Porterfield D, Apple FS. Cardiac troponin T composition in normal and regenerating human skeletal muscle. *Clin Chem* 1997;43:476-84.
29. Haller C, Zehelein J, Remppis A, Muller-Bardorff M, Katus HA. Cardiac troponin T in patients with end-stage renal disease: absence of expression in truncal skeletal muscle. *Clin Chem* 1998;44:930-8.
30. Ricchiuti V, Voss EM, Ney A, Odland M, Anderson PAW, Apple FS. Cardiac troponin T isoforms expressed in renal diseased skeletal muscle will not cause false-positive results by the second generation cardiac troponin T assay by Boehringer Mannheim. *Clin Chem* 1998;44:1919-24.
31. Porter GA, Norton T, Bennett WM. Troponin T, a predictor of death in chronic hemodialysis patients. *Eur Heart J* 1998;19 Suppl):N34-7.
32. Van Lente F, McErlean ES, DeLuca SA, Peacock F, Rao JS, Nissen SE. Ability of troponins to predict adverse outcomes in patients with renal insufficiency and suspected acute coronary syndromes: a case-matched study. *J Am Coll Cardiol* 1999;33:471-8.
33. Chapelle JP, Albert A, Smeets JP, Boland J, Heusghem C, Kulbertus HE. Serum myoglobin determinations in the assessment of acute myocardial infarction. *Eur Heart J* 1982;3:122-9.
34. Pervaiz S, Anderson FP, Lohman TP, Lawson CJ, Feng YJ, Waskiewicz D, et al. Comparative analysis of cardiac troponin I and CK-MB as markers of acute myocardial infarction. *Clin Cardiol* 1997;20:269-71.
35. Maddison A, Craig A, Yusuf S, Lopez R, Sleight P. The role of serum myoglobin in the detection and measurement of myocardial infarction. *Clin Chim Acta* 1980;106:17-28.
36. Mair J, Morandell D, Genser N, Lechleitner P, Dienstl F, Puschendorf B. Equivalent early sensitivities of myoglobin, creatine kinase MB mass, creatine

- kinase isoform ratios, and cardiac troponins I and T for acute myocardial infarction. *Clin Chem* 1995;41:1266-72.
37. Puleo PR, Guadagno PA, Roberts R, Scheel MV, Marian AJ, Churchill D, Perryman MB. Early diagnosis of acute myocardial infarction based on assay for subforms of creatine kinase-MB. *Circulation* 1990;82:759-64.
  38. Puleo PR, Guadagno PA, Roberts R, Perryman MB. Sensitive, rapid assay of subforms of creatine kinase MB in plasma. *Clin Chem* 1989;35:1452-5.
  39. Guadagnoli E, Hauptman PJ, Ayanian JZ, Pashos CL, McNeil BJ, Cleary PD. Variation in the use of cardiac procedures after acute myocardial infarction. *N Engl J Med* 1995;333:573-8.
  40. The Thrombolysis in Myocardial Infarction (TIMI) Study Group. The Thrombolysis In Myocardial Infarction (TIMI) Trial Phase I findings. *N Engl J Med* 1985;312:932-6.
  41. The GISSI Study Group. Effectiveness of intravenous thrombolytic treatment in acute myocardial infarction. *Lancet* 1986;1:397-402.
  42. Lott JA, Stang JM. Serum enzymes and isoenzymes in the diagnosis and differential diagnosis of myocardial ischemia and necrosis. *Clin Chem* 1980;26:1241-50.
  43. World Health Organization. Report of the Joint International Society and Federation of Cardiology/World Health Organization Task Force on Standardization of Clinical Nomenclature. Nomenclature and criteria for diagnosis of ischemic heart disease. *Circulation* 1979;59:607-9.
  44. Marmor A, Sobel BE, Robert R. Factors presaging early recurrent myocardial infarction ("extension"). *Am J Cardiol* 1981;48:603-10.
  45. Wu AHB, Laios I, Green S, Gornet TG, Wong SS, Parmley L, et al. Immunoassays for serum and urine myoglobin: myoglobin clearance assessed as a risk factor for acute renal failure. *Clin Chem* 1994;40:796-802.

46. Chappelle JP, Bertrand A, Heughem C. The protection of creatine kinase MM subforms by EDTA during storage. *Clin Chim Acta* 1981;115:255-62.
47. Lee TH, Goldman L. Serum enzyme assays in the diagnosis of acute myocardial infarction. Recommendations based on a quantitative analysis. *Ann Intern Med* 1986;105:221-33.
48. Gibler WB, Lewis LM, Erb RE, Makens PK, Kaplan BC, Vaughn RH, et al. Early detection of acute myocardial infarction in patients presenting with chest pain and nondiagnostic ECGs: serial CK-MB sampling in the emergency department. *Ann Emerg Med* 1990;19:1359-66.
49. Gibler WB, Gibler CD, Weinshenker E, Abbottsmith C, Hedges JR, Barsan WG, et al. Myoglobin as an early indicator of acute myocardial infarction. *Ann Emerg Med* 1987;16:851-6.
50. Panteghini M, Pagani F. Diagnostic value of a single measurement of troponin T in serum for suspected acute myocardial infarction [Letter]. *Clin Chem* 1994;40:6734.
51. Sabar R, Gul K, Deedwania PC. Troponin-I alone is adequate for the diagnosis of acute myocardial infarction; is it necessary to do multiple enzymatic assays? [Abstract]. *J Am Coll Cardiol* 1999;33(Suppl A):345A.
52. Muller-Bardorff M, Hallermayer K, Schroder A, Ebert C, Borgya A, Gerhardt W, et al. Improved troponin T ELISA specific for cardiac troponin T isoform: assay development and analytical and clinical evaluation. *Clin Chem* 1997;43:458-66.
53. Adams JE, Bodor GS, Davila-Roman VG, Delmez JA, Apple FS, Ladenson HJ, Jaffe AS. Cardiac troponin I. A marker with high specificity for cardiac injury. *Circulation* 1993;88:101-6.
54. Newby LK, Christenson RH, Ohman EM, Armstrong PW, Thompson TD, Lee KL, et al. Value of serial troponin T measures for early and late risk stratification in

- patients with acute coronary syndromes. The GUSTO IIa Investigators. *Circulation* 1998;98:1853-9.
55. Fuster V, Fayad A, Badimon JJ. Acute coronary syndromes: biology. *lancet* 1999;353(suppl II):5-9.
  56. Strydom HC, Chandler AB, Dinsmore RE, Fuster V, Glagov S, Insull W Jr, et al. A definition of advanced type of atherosclerotic lesions and a histologic classification of atherosclerosis. A report from the Committee on Vascular Lesions of the Council on Arteriosclerosis, American Heart Association. *Circulation* 1995;92:1355-74.
  57. Fuster V, Badimon L, Badimon JJ, Chesebrough JH. The pathogenesis of coronary artery disease and the acute coronary syndromes. Part 1. *N Engl J Med* 1992;326:242-50.
  58. Libby P. Molecular bases of the acute coronary syndromes. *Circulation* 1995;91:2844-50.
  59. Wu AHB, Valdes R Jr, Apple FS, Gornet T, Stone MA, Mayfield-Stokes S, et al. Cardiac troponin-T immunoassay for diagnosis of acute myocardial infarction and detection of minor myocardial injury. *Clin Chem* 1994;40:900-7.
  60. Hamm CW, Ravkilde J, Gerhardt W, Jorgensen P, Peheim E, Ljungdahl L. The prognostic value of serum troponin T in unstable angina. *N Engl J Med* 1992;327:146-50.
  61. Ravkilde J, Horder M, Gerhardt W, Ljungdahl L, Pettersson T, Tryding N, et al. Diagnostic performance and prognostic value of serum troponin T in suspected acute myocardial infarction. *Scand J Clin Lab Invest* 1993;53:677-85.
  62. Ohman EM, Armstrong PW, Christenson RH, Granger CB, Katus HA, Hamm CW, et al. Cardiac troponin T levels for risk stratification with admission cardiac troponin T levels in acute myocardial ischemia. The GUSTO IIa Investigators. *N Engl J Med* 1996;335:1333-41.

63. Antman EM, Tanasijevic MJ, Thompson B, Schactman M, McCabe CH, Cannon CP, et al. Cardiac-specific troponin I levels to predict the risk of mortality in patients with acute coronary syndromes. *N Engl J Med* 1996;335:1342-9.
64. Galvani M, Ottani F, Ferrini D, Ladenson JH, Destro A, Baccos D, et al. Prognostic influence of elevated values of cardiac troponin I in patients with unstable angina. *Circulation* 1997;43:2053-9.
65. Luscher MS, Thygesen K, Ravkilde J, Heickendorff L. Applicability of cardiac troponin T and I for early risk stratification in unstable coronary artery disease. The Thrombin Inhibition in Myocardial Ischemia Study Group. *Circulation* 1997;96:2578-85.
66. Olatidoye AG, Wu AHB, Feng YJ, Waters D. Prognostic role of troponin T versus I in unstable angina for cardiac events with meta-analysis comparing published studies. *Am J Cardiol* 1998;81:1405-10.
67. Lindahl B, Venge P, Wallentin L. Relation between troponin T and the risk of subsequent cardiac events in unstable coronary artery disease. The Fragmin during Instability in Coronary Artery Disease Study Group. *Circulation* 1996;93:1651-7.
68. Jesse RL. Myocardial necrosis in pure unstable angina: identification of high-risk subgroups or a contradiction in terms? *Am Heart J* 1999;137:190-2.
69. Wu AHB. Analytical and clinical evaluation of new diagnostic tests for myocardial damage. *Clin Chim Acta* 1998;272:11-21.
70. Lindahl B, Venge P, Wallentin L. Troponin T identifies patients with unstable coronary artery disease who benefit from long-term antithrombotic protection. Fragmin in Unstable Coronary Artery Disease (FRISC) Study Group. *J Am Coll Cardiol* 1997;29:43-8.



71. Hamm CW, Heeschen C, Goldmann BU, Barnathan E, Simoons ML. Value of troponins in predicting therapeutic efficacy of abciximab in patients with unstable angina [Abstract]. *J Am Coll Cardiol* 1998;31(Suppl A):185A.
72. Gerhardt W, Katus H, Ravkilde J, Hamm C, Jorgensen PJ, Peheim E, et al. S-troponin T in suspected ischemic myocardial injury compared with mass and catalytic concentrations of S-creatine kinase isoenzyme MB. *Clin Chem* 1991;37:1405-11.
73. Keffer JH. Why cardiospecificity is preeminent in myocardial markers of injury. *Clin Lab Med* 1997;14:727-35.
74. Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults. Summary of the second report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation and Treatment of High Blood Cholesterol in Adults. (Adult Treatment Panel II). *JAMA* 1993;269:3015-23.
75. Thayapran N, Prigent F, Steingart R., Feng YJ, Lowenkron D, Wu A. Is there a release of cardiac troponin during exercise testing? [Abstract]. *Circulation* 1997;96(Suppl):I-461.
76. Kwong TC, Fitzpatrick PG, Rothbard RL. Activities of some enzymes in serum after therapy with intracoronary streptokinase in acute myocardial infarction. *Clin Chem* 1984;30:731-4.
77. Califf RM, O'Neil W, Stack RS, Aronson L, Mark DB, Mantell S, et al. Failure of simple clinical measurements to predict perfusion status after intravenous thrombolysis. *Ann Intern Med* 1988;108:658-62.
78. Ellis AK, Little T, Masud AR, Liberman HA, Morris DC, Klocke FJ. Early noninvasive detection of successful reperfusion in patients with acute myocardial infarction. *Circulation* 1988;78:1352-7.
79. Zabel M, Hohnloser SH, Koster W, Prinz M, Kasper W, Just H. Analysis of creatine kinase, CK-MB, myoglobin, and troponin T time-activity curves for early

- assessment of coronary artery reperfusion after intravenous thrombolysis.  
Circulation 1993;87:1542-50.
80. Apple FS, Henry TD, Berger CR, Landt YA. Early monitoring of serum cardiac troponin I for assessment of coronary reperfusion following thrombolytic therapy. Am J Clin Pathol 1996;105:6-10.
  81. Abe S, Arima S, Yamashita T, Miyata M, Okino H, Toda H, et al. Early assessment of reperfusion therapy using cardiac troponin T. J Am Coll Cardiol 1994;23:1382-9.
  82. Ishii J, Nomura M, Ando T, Hasegawa H, Kimura M, Kurokama H, et al. Early detection of successful coronary reperfusion based on serum myoglobin concentration: comparison with serum creatin kinase MB activity. Am Heart J 1994;128:651-8.
  83. Laperche T, Steg PG, Dehoux M, Benessiano J, Grollier G, Aliot E, et al. A study of biochemical markers of reperfusion early after thrombolysis for acute myocardial infarction. The PERM Study Group. Perspective Evaluation of Reperfusion Markers. Circulation 1995;92:2079-86.
  84. Tanasijevic MJ, Cannon CP, Wybenga DR, Fischer GA, Grudzien C, Gibson CM, et al. Myoglobin, creatine kinase MB, and cardiac troponin-I to assess reperfusion after thrombolysis for acute myocardial infarction: results from TIMI 10A. Am Heart J 1997;134:622-30.
  85. Christenson RH, Ohman EM, Topol EJ, Peck S, Newby LK, Duh SH, et al. Assessment of coronary reperfusion after thrombolysis with a model combining myoglobin, creatine kinase-MB, and clinical variables. TAMI-7 Study Group Thrombolysis and Angioplasty in Myocardial Infarction-7. Circulation 1997;96:1776-82.
  86. Hohnloser SH, Zabel M, Kasper W, Meinertz T, Just H. Assessment of coronary artery patency after thrombolytic therapy: accurate prediction utilizing the

- combined analysis of three noninvasive markers. *J Am Coll Cardiol* 1991;18:44-9.
87. Balderman SC, Bhayana JN, Steinbach JJ, Masud AR, Michalek S. Perioperative myocardial infarction: a diagnostic dilemma. *Ann Thorac Surg* 1980;30:370-7.
88. Strom S, Bendz R, Olin C, Lundberg S. Serum enzymes with special reference to CK-MB following coronary bypass surgery. *Scand J Thorac Cardiovasc Surg* 1979;13:53-9.
89. Katus HA, Schoeppenthau M, Tanzeem A, Bauer HG, Saggau W, Diederich KW, et al. Non-invasive assessment of perioperative myocardial cell damage by circulating cardiac troponin T. *Br Heart J* 1991;65:259-64.\
90. Etievent JP, Chocron S, Toubin G, Taberlet C, Alwan K, Clement F, et al. Use of cardiac troponin I as a marker of perioperative myocardial ischemia. *Ann Thorac Surg* 1995;59:1192-4.
91. Metzler H, Gries M, Rehak P, Lang TH, Fruthwald S, Toller W. Perioperative myocardial cell injury: the role of troponins. *Br J Anaesth* 1997;78:386-90.
92. Grande P, Christiansen C, Alstrup K. Comparison of ASAT, CK, CK-MB, and LD for the estimation of acute myocardial infarct size in man. *Clin Chim Acta* 1983;128:329-35.
93. Vatner SF, Baig H, Manders WT, Maroko PR. Effects of coronary artery reperfusion on myocardial infarct size calculated from creatine kinase. *J Clin Investig* 1977;61:1048-56.
94. Nagai R, Chiu CC, Yamaoki K, Ohuchi Y, Ueda S, Imataka K, Yazaki Y. Evaluation of methods for estimating infarct size by myosin LC2: comparison with cardiac enzymes. *Am J Physiol* 1983;245:H413-9.
95. Maxwell SR, Lip GY. Reperfusion injury: a review of the pathophysiology, clinical manifestations and therapeutic options. *Int J Cardiol* 1998;58:95-117.

96. National Committee for Clinical Laboratory Standards. How to define and determine reference intervals in the clinical laboratory: approved guideline. Document C28-A. Villanova, PA: NCCLS, 1995.
97. Sasse EA. Reference intervals and clinical decision limits. In: Kaplan LA, Pesce AJ, eds. Clinical chemistry theory, analysis, and correlation, 3rd ed. St. Louis: Mosby, 1996:370-1.
98. Henderson AR, Bhayana W. A modest proposal for the consistent presentation of ROC plots in Clinical Chemistry [Abstract]. Clin Chem 1995;41:1205-6.
99. Missov ED, DeMarco T. Clinical insights on the use of highly sensitive cardiac troponin assays. Clin Chim Acta 1999;284:175-85.
100. Ridker PM, Cushman M, Stampfer MJ, Tracy RP, Hennekens CH. Inflammation, aspirin, and the risk of cardiovascular disease in apparently healthy men. N Engl J Med 1997;336:973-9.
101. Liuzzo G, Biasucci LM, Gallimore JR, Grillo RL, Rebuffi AG, Pepys MB, Maseri A. The prognostic value of C-reactive protein and serum amyloid A protein in severe unstable angina. N Engl J Med 1994;331:417-24.
102. Carville DGM, Dimitrijevic N, Walsh M, Digirolamo T, Brill EM, Drew N, Gargan PE. Thrombus precursor protein (TpP): marker of thrombosis early in the pathogenesis of myocardial infarction. Clin Chem 1996;42:1537-41.
103. Ikeda H, Takajo Y, Ichiki K, Ueno T, Maki S, Noda T, et al. Increased soluble form of p-selectin in patients with unstable angina. Circulation 1995;92:1693-6.
104. Hollander JE, Muttreja MR, Dalesandro MR, Shofer FS. Risk stratification of emergency department patients with acute coronary syndromes using P-selectin. J Am Coll Cardiol 1999;34:95-105.
105. Rabitzsch G, Mair J, Lechleitner P, Noll F, Hofmann U, Krause EG, et al. Immunoenzymometric assay of human glycogen phosphorylase isoenzyme BB in diagnosis of ischemic myocardial injury. Clin Chem 1995;41:966-78.

106. van Nieuwenhoven FA, Kleine AH, Wodzig KWH, Hermens WT, Kragten HA, Maessen JG, et al. Discrimination between myocardial and skeletal muscle injury by assessment of the plasma ratio of myoglobin over fatty acid-binding protein. *Circulation* 1995;92:2848-54.
107. Vuori J, Syrjala H, Vaananen HK. Myoglobin/carbonic anhydrase III ratio: highly specific and sensitive early indicator for myocardial damage in acute myocardial infarction. *Clin Chem* 1996;42:107-9.
108. Mair J. Progress in myocardial damage detection: new biochemical markers for clinicians. *Crit Rev Clin Lab Sci* 1997;34:1-66.
109. Hearse DJ. Cellular damage during myocardial ischaemia: metabolic changes leading to enzyme leakage. In: *Enzymes in cardiology. Diagnosis and research.* Hearse DJ, de Leiris J, eds., Chichester: Wiley, 1979:4-14.
110. Apple FS. Acute myocardial infarction and coronary reperfusion. Serum cardiac markers for the 1990s. *Am J Clin Pathol* 1992;97:217-26.
111. Apple FS, Sharkey S, Christensen D, McCoy M, Mille EA, Murakami MA. Implementation of serum cardiac troponin I as marker for detection of acute myocardial infarction. *Am Heart J* 1999;137:332-7.
112. Martins JT, Li DJ, Baskin LB, Jialal I, Keffer JH. Comparison of cardiac troponin I and lactate dehydrogenase isoenzymes for the late diagnosis of myocardial injury. *Am J Clin Pathol* 1996;106:705-8.
113. Wu AHB, Perryman MB. Clinical applications of muscle enzymes and proteins. *Curr Opin Rheumatol* 1992;4:815-20.
114. Wu AHB, Feng YJ, Moore R, Apple FS, McPherson PH, Buechler KF, Bodor G. Characterization of cardiac troponin subunit release into serum following acute myocardial infarction, and comparison of assays for troponin T and I. American Association for Clinical Chemistry Subcommittee on cTnI Standardization. *Clin Chem* 1998;44:1198-208.

115. Giuliani I, Bertinchant JP, Granier C, Laprade M, Chocron S, Toubin G, et al. Determination of cardiac troponin I forms in the blood of patients with acute myocardial infarction and patients receiving crystalloid or cold blood cardioplegia. *Clin Chem* 1999;45:213-22.
116. Filatov VL, Katrukha AB, Bereznikova AV, Esakova TV, Bulargina TV, Kolosova OV, et al. Epitope mapping of anti-troponin I monoclonal antibodies. *Biochem Mol Biol Int* 1998;45:1179-87.
117. Katrukha AG, Bereznikova AV, Filatov V, Esakova TV, Kolosova OV, Pettersson K, et al. Degradation of cardiac troponin I: implications for reliable immunodetection. *Clin Chem* 1998;44:2433-40.
118. Wu AHB. Laboratory and near patient testing for cardiac markers. *J Clin Ligand Assay* 1999;22:32-7
119. Fitzmaurice TF, Brown C, Rifai N, Wu AH, Yeo KT. False increase of cardiac troponin I with heterophile antibodies. *Clin Chem* 1998;44:2212-4.
120. Revision of troponin policy. Medicare Part A. Newsletter 004-98. Dallas, TX: Health Care Financing Administration, August 1998:6-7.
121. de Winter RJ, Koster RW, Sturk A, Sanders GT. Value of myoglobin, troponin T, and CK-MB mass in ruling out an acute myocardial infarction in the emergency room. *Circulation* 1995;92:3401-7.
122. Wu AHB, Wang X-M, Gornet TG, Ordonez-Llanos J. Creatine kinase MB isoforms in patients with myocardial infarction and skeletal muscle injury. Ramifications for early detection of acute myocardial infarction. *Clin Chem* 1992;38:2396-400.
123. el Allaf M, Chapelle JP, el Allaf D, Adam A, Faymonville ME, Laurent P, Heusghem C. Differentiating muscle damage from myocardial injury by means of the serum creatine kinase (CK) isoenzyme MB mass measurement/total CK activity ratio. *Clin Chem* 1986;32:291-5.
124. Koch TR, Mehta UJ, Nipper HC. Clinical and analytical evaluation of kits for measurement of creatine kinase isoenzyme MB. *Clin Chem* 1986;32:186-91.

125. Lott JA, Heinz JW, Reger KA. Time changes of creatine kinase and creatine kinase-MB isoenzyme versus discrimination values in the diagnosis of acute myocardial infarction: what is the optimal method for displaying the data? *Eur J Clin Chem Clin Biochem* 1995;33:491-6.
126. Selker HP, Zalenski RJ, Antman EM, Aufderheide TP, Bernard SA, Bonow RO, et al. An evaluation of technologies for identifying acute cardiac ischemia in the emergency department: a report from the National Heart Attack Alert Program Working Group. *Ann Emerg Med* 1997;29:13-87.
127. Wu AHB, Clive J. Impact of CK-MB testing policies on hospital length of stay and laboratory costs for patients with myocardial infarction or chest pain. *Clin Chem* 1997;43:326-32.
128. Anderson FP, Jesse RL, Nicholson CS, Miller WG. The costs and effectiveness of a rapid diagnostic and treatment protocol for myocardial infarction. In: Bowie LJ, ed. *Assessing clinical outcomes. Utilizing appropriate laboratory testing to decrease healthcare costs and improve patient outcomes.* Washington, DC: AACC Leadership Series, 1996:20-4.
129. Antman EM, Grudzien C, Sacks DB. Evaluation of a rapid bedside assay for the detection of serum cardiac troponin T. *JAMA* 1995;273:1279-82.
130. Brogan GX, Bock JL, McCuskey CF, Hollander JE, Thode H Jr, Gawad Y, Jackowski G. Evaluation of Cardiac STATus CK-MB/Myoglobin device for rapidly ruling out myocardial infarction. *Clin Lab Med* 1997;17:655-8.
131. Collinson PO, Gerhardt W, Katus HA, Muller-Bardorff M, Braun S, Schricke U, et al. Multicenter evaluation of an immunological rapid test for the detection of troponin T in whole blood samples. *Eur J Clin Chem Clin Biochem* 1996;34:591-8.
132. Apple FS, Christenson RH, Valdes R Jr, Wu AHB, Andriak AJ, Duh SH, et al. Simultaneous rapid measurement of whole blood myoglobin, creatine kinase MB and cardiac troponin I by the Triage Cardiac Panel for detection of myocardial infarction. *Clin Chem* 1999;45:199-205.

133. Collinson PO, John C, Cramp DRG, Canepa-Anson R. Prospective randomised controlled trial of point of care testing with central laboratory testing for cardiac enzyme measurement [Abstract]. *Clin Chem* 1998;44:A69.
134. Kricka LJ, Schmerfeld-Pruss D, Senior M, Goodman DBP, Kaladas P. Interference by human anti-mouse antibody in two-site immunoassays. *Clin Chem* 1990;36:892-4.
135. Fitzmaurice TF, Brown C, Rifai N, Wu AHB, Yeo KTJ. False increase of cardiac troponin I with heterophilic antibodies. *Clin Chem* 1998;44:2212-4.
136. Panteghini M, Pagani F. Biological variation of myoglobin in serum [Letter]. *Clin Chem* 1997;42:2435
137. Ross SM, Fraser CG. Biological variation of cardiac markers: analytical and clinical considerations. *Ann Clin Biochem* 1998;35:80-4.
138. Liao R, Wang CK, Cheung HC. Coupling of calcium to the interaction of troponin I with troponin C from cardiac muscle. *Biochemistry* 1994;33:12729-34.