

 **Get Answers NOW** To find out more about this new clinical resource that quickly delivers highly relevant diagnosis and treatment guidance at the point of care. **CLICK HERE** **BMJ Point of Care** powered by **ePROCRATES** **REQUEST A FREE TRIAL**

Search all BMJ Products

BMJ helping doctors make better decisions

Search bmj.com

Advanced search

BMJ 1997;314:1512 (24 May)

Papers

Prospective randomised study of intensive insulin treatment on long term survival after acute myocardial infarction in patients with diabetes mellitus

Klas Malmberg, *cardiologist*,^a, for the DIGAMI (Diabetes Mellitus Insulin Glucose Infusion in Acute Myocardial Infarction) Study Group

^a Department of Cardiology, Karolinska Hospital, S-171 76 Stockholm, Sweden

▶ Abstract

Objectives: To test the hypothesis that intensive metabolic treatment with insulin-glucose infusion followed by multidose insulin treatment in patients with diabetes mellitus and acute myocardial infarction improves the prognosis.

Design: Patients with diabetes mellitus and acute myocardial infarction were randomly allocated standard treatment plus insulin-glucose infusion for at least 24 hours followed by multidose insulin treatment or standard treatment (controls).

Subjects: 620 patients were recruited, of whom 306 received intensive insulin treatment and 314 served as controls.

Main outcome measure: Long term all cause mortality.

Results: The mean (range) follow up was 3.4 (1.6-5.6) years. There were 102 (33%) deaths in the treatment group compared with 138 (44%) deaths in the control group (relative risk (95% confidence interval) 0.72 (0.55 to 0.92); P=0.011). The effect was most pronounced among the predefined group that included 272 patients without previous insulin treatment and at a low cardiovascular risk (0.49 (0.30 to 0.80); P=0.004).

Conclusion: Insulin-glucose infusion followed by intensive subcutaneous insulin in diabetic patients with acute myocardial infarction improves long term survival, and the effect seen at one year continues for at least 3.5 years, with an absolute reduction in mortality of 11%. This means that one life was saved for nine treated patients. The effect was most apparent in patients who had not previously received insulin treatment and who were at a low cardiovascular risk.

- ▶ Top
- Abstract
- ▶ Introduction
- ▶ Subjects and methods
- ▶ Results
- ▶ Discussion
- ▶ References

Key messages

- Diabetes mellitus is common among patients with acute myocardial infarction
- Diabetic patients with myocardial infarction have a poor short and long term prognosis
- Poor metabolic control is common among diabetic patients with myocardial infarction

- Improved metabolic control by means of acute insulin-glucose infusion followed by long term intensive insulin treatment improves long term prognosis among these patients

▶ Introduction

It is well established that patients with diabetes mellitus are more likely than patients without diabetes to die after an acute myocardial infarction. The increased mortality is seen both in the acute phase and during one year of follow up.^{1 2 3} Studies that followed up patients for more than one year all showed a continued increased mortality among patients with diabetes.^{4 5 6 7 8 9} The unfavourable prognosis of diabetic patients has mainly been attributed to more pronounced left ventricular dysfunction^{7 10 11 12} and a high likelihood of reinfarction, many of which are fatal.^{1 4 13} Many factors may contribute to this unfavourable outcome, such as severe and diffuse coronary artery disease, diabetic cardiomyopathy, disturbed autonomic tone, and abnormal fibrinolytic and platelet function, as well as purely metabolic factors causing more oxygen consuming use of free fatty acids during acute myocardial ischaemia.¹⁴

- ▲ Top
- ▲ Abstract
- Introduction
- ▼ Subjects and methods
- ▼ Results
- ▼ Discussion
- ▼ References

We previously showed that the one year mortality in diabetic patients with acute myocardial infarction can be reduced by 30% with acute administration of insulin and glucose followed by intensive treatment with multidose subcutaneous insulin.^{15 16 17}

This report describes the long term effect on overall mortality of intensive insulin treatment in diabetic patients after an acute myocardial infarction.

▶ Subjects and methods

Study design

A detailed description of the diabetes mellitus, insulin glucose infusion in acute myocardial infarction (DIGAMI) study, including design, definitions, and methods, has been given elsewhere.^{15 16} All patients admitted to the coronary care units of 19 Swedish hospitals were considered for inclusion if they had had an acute myocardial infarction within the preceding 24 hours combined with previously known diabetes mellitus and a blood glucose concentration >11 mmol/l or a similar blood glucose concentration without known diabetes mellitus. Patients who could not participate for reasons of health, refused to participate, lived outside the hospital catchment area, were enrolled in other studies, or had participated previously in DIGAMI were excluded. Remaining subjects were randomised blindly to one of two groups: insulin and glucose or control. The randomisation was performed as soon as possible after hospital admission (mean (SD) 13 (7) hours after onset of symptoms). Besides standard treatment in a coronary care unit, patients in the insulin-glucose group received an insulin-glucose infusion according to a predefined protocol for at least 24 hours. This was followed by subcutaneous insulin four times daily for at least three months. Control patients were treated according to standard practice. These patients did not receive any insulin unless clinically indicated.

- ▲ Top
- ▲ Abstract
- ▲ Introduction
- Subjects and methods
- ▼ Results
- ▼ Discussion
- ▼ References

Before randomisation the patients were classified as being at high risk if they fulfilled two or more of the following criteria: age >70 years; previous myocardial infarction; history of congestive heart failure; and current treatment with digitalis. Before randomisation the patients were stratified into one of four groups according to risk (high; low) and to previous antidiabetic treatment (insulin; no insulin). Predefined groups were: no insulin-low risk (n=272); no insulin-high risk (n=129); insulin-low risk (n=119); and insulin-high risk (n=100).

Concomitant drug treatment was managed according to strict, predefined guidelines to achieve a uniform treatment in the two groups, apart from the use of insulin. If there were no contraindications thrombolysis and treatment with β blockers and aspirin were initiated as soon as possible.

The DIGAMI protocol was approved by the ethics committees at the Karolinska Institute and the Universities of Gothenburg, Linköping, Lund, and Uppsala.

Details of patients

Altogether 1240 diabetic patients with suspected acute myocardial infarction were admitted during January 1990 to December 1993. Half of them were excluded because of the exclusion criteria, leaving 620 patients. A detailed report of exclusion criteria and characteristics of excluded patients has been given elsewhere.¹⁶ Of the 620 study patients, 314 were allocated to the control group and 306 to the infusion group. Table 1) gives details of the patients allocated to the two groups and shows that the groups were balanced.

Table 1 Characteristics of patients before admission for myocardial infarction. Values are numbers

View this table: (percentages) of patients in each group unless stated otherwise

[in this window]

[in a new window]

All patients were followed up prospectively for one year, with scheduled visits at three and 12 months after randomisation, when specific case record forms were completed. These included information on mortality and morbidity. After one year the patients were followed up by their physician by regular visits according to the patient's need. On 31 July 1995 the vital status of all patients was checked and verified by the physician responsible for the study in each participating centre. No patient was lost to follow up.

Statistics

Standard statistical methods were used. Values are presented as means (SD). The significance of the differences between the two groups was tested by Student's *t* test and Fisher's exact test. Differences within groups were tested by a paired test. For survival data the log rank test was used. The effect and its confidence interval was estimated by the relative hazards rate in a Cox analysis.¹⁸ Cumulative mortality curves were estimated by the Kaplan-Meier method. All these data were handled according to the intention to treat principle. The Cox model was used to adjust simultaneously for other factors. A two tailed *P* value less than 0.05 was considered significant.

▶ Results

The mean (range) follow up time was 3.4 (1.6-5.6) years, and no patients were lost to follow up as regards mortality.

Treatment

During the period in hospital almost half of the patients were given thrombolysis. At the time of hospital discharge 496 (80%) patients were taking aspirin and 434 (70%) β blockers.

Angiotensin converting enzyme inhibitors were given to 192 (31%) patients. Besides antidiabetic treatment, including insulin, there were no significant differences between the

two groups in the treatment in hospital or during follow up. During the first year of follow up 13 patients in the infusion group and 16 in the control group had a percutaneous transluminal coronary angioplasty, and bypass surgery was performed in 33 patients in the infusion group compared with 35 in the control group. At discharge from hospital 266 (87%) patients in the infusion group were taking insulin treatment compared with 135 (43%) in the control group ($P < 0.0001$). The corresponding numbers were 245 (80%) and 141 (45%) ($P < 0.0001$) after three months and 220 (72%) and 141 (49%) after one year ($P < 0.0001$).

Metabolic control

At randomisation the two groups did not differ in concentration of glycated haemoglobin (A1c, table 1). Haemoglobin A1c decreased significantly in both groups during follow up. The reduction was greater in the infusion group both at three (1.1 (SD 1.6%) ν 0.4 (1.5%); $P < 0.0001$) and 12 months (0.9 (1.9%) ν 0.4 (1.8%); $P < 0.01$). Fasting blood glucose one year after randomisation did not differ between the two groups.

In the low risk-no insulin group the corresponding haemoglobin A1c value at three months was (1.3 (1.8%) ν 0.6 (1.5%); $P < 0.001$) and at 12 months was (1.3 (1.9%) ν 0.5 (1.5%); $P < 0.001$).

Mortality

▶ Top
▶ Abstract
▶ Introduction
▶ Subjects and methods
▪ Results
▼ Discussion
▼ References

During the initial year of follow up, including deaths in hospital, 82 (26%) patients died in the control group compared with 58 (19%) in the insulin group. This corresponds to a relative reduction in mortality of 30% (P=0.027). Most of the reduction occurred after discharge from hospital. Only in patients without previous insulin treatment and at low cardiovascular risk (44% of all patients) was this reduction already significant during the hospital phase (from 12% in the control group to 5% in the infusion group; relative reduction 58%; P<0.05).

During the continued follow up there were 138 (44%) deaths in the control group compared with 102 (33%) in the infusion group. Figure 1) presents the mortality curves for all patients. After one year there was a separation between the curves, which tended to increase with time. The relative reduction in mortality at the end of follow up (mean (range) 3.4 (1.6-5.6) years) was 28% by the Cox model (95% confidence interval 8% to 45%; P=0.011).

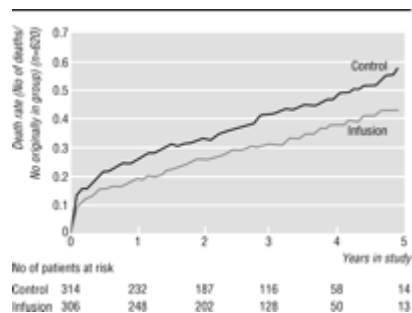


Fig 1 Actuarial mortality curves during long term follow up in patients receiving insulin-glucose infusion and in control group among total DIGAMI cohort. Absolute reduction in risk was 11%; relative risk 0.72 (0.55 to 0.92); P=0.011

[View larger version \(21K\):](#)
[\[in this window\]](#)
[\[in a new window\]](#)

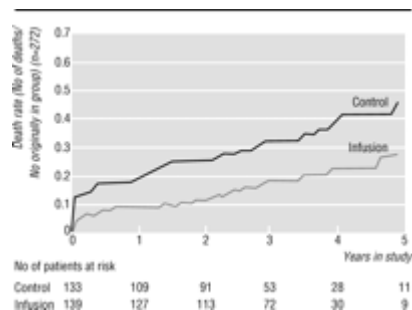


Fig 2 Actuarial mortality curves during long term follow up in patients receiving insulin-glucose infusion and among control group of patients at low risk who were not taking insulin before randomisation. Absolute reduction was 15%; relative risk 0.49 (0.30 to 0.81); P=0.004

[View larger version \(20K\):](#)
[\[in this window\]](#)
[\[in a new window\]](#)

Table 2) presents the long term mortality within the prestratified risk groups. The most apparent effect was achieved in the low risk group not taking insulin, with an absolute reduction in mortality of 15%, from 33% in the control group to 18% in the infusion group. This corresponds to a relative reduction of 51% (19% to 70%; P=0.004) by the Cox model. Figure 2) gives the mortality curves for this group.

Table 2 Long term mortality according to insulin treatment and risk of death. Values are numbers

[View this table:](#) (percentages) patients unless otherwise stated
[\[in this window\]](#)
[\[in a new window\]](#)

▶ Discussion

Diabetes mellitus is an independent marker of morbidity and mortality after acute myocardial infarction.^{1 8} The DIGAMI study has previously shown that the one year mortality in diabetic patients after an acute myocardial infarction could be reduced by 30% with intensive insulin treatment and that this treatment tended to influence all cardiovascular causes of death favourably.^{16 17} This report shows that this effect is sustained for more than three years and further supports the theory that metabolic control is of utmost importance in macrovascular death.

▲ Top
▲ Abstract
▲ Introduction
▲ Subjects and methods
▲ Results
▪ Discussion
▼ References

Study limitations

One limitation of this study is that exact information about insulin treatment during long term follow up is not available. However, 220 (72%) in the infusion group and 154 (49%) in the control group were taking insulin at one year. Our experience is that withdrawal of insulin treatment after more than one year is uncommon. There was a gradual increase in insulin treatment among control patients, presumably reflecting the natural course of non-insulin dependent diabetes.

Importance of metabolic control

As previously reported the reduction in mortality increased during the first year of follow up.¹⁶ After one year the curves were still separate, and this impression increased during late follow up. It was clearly evident in low risk patients without previous insulin treatment. This suggest that long term metabolic control by means of intensified insulin treatment contributed to the beneficial result in the infusion group. In the no insulin-low risk group, however, mortality was already significantly reduced by half during the time in hospital, indicating dual effects of the complete regimen. Several recent studies have reported that metabolic control measured as fasting blood glucose or haemoglobin A1c concentration is a major determinant of future development of coronary heart disease among patients with non-insulin dependent diabetes mellitus.^{19 20 21 22} Cardiovascular events decreased by 40% after intense treatment of patients with insulin dependent diabetes in the diabetes control and complications trial.²³ In the current study 97% of all deaths during the first year of follow up had cardiovascular causes, and there was a trend in reduction of all types of cardiovascular deaths including fatal reinfarctions in the intervention group.¹⁷ During the first year haemoglobin A1c concentration decreased in both groups but significantly more in the infusion group, suggesting that long term metabolic control is important in the prevention of macrovascular death in patients with diabetes mellitus.

Possible mechanisms

The varying effects in different risk groups are interesting. They show that patients who had not previously been treated with insulin and who had a comparatively low risk profile benefited the most. This is in agreement with Rogers *et al*, who found the best treatment effect of glucose-insulin-potassium infusion in non-diabetic patients with a low Killip class and an overall low mortality.²⁴ The effect in the no insulin-low risk group may be related to reduced ischaemic injury during the acute phase, protecting against subsequent development of myocardial dysfunction. This may be further enhanced by continued subcutaneous insulin treatment with subsequent improved metabolic control. Intense insulin treatment may restore impaired platelet function,²⁶ correct the disturbed lipoprotein pattern,²⁵ and decrease plasma activity of plasminogen activator inhibitor, which is high in diabetic patients.²⁷ The extended insulin treatment, with its beneficial secondary metabolic effects, is one possible mechanism for the reduced long term mortality in the infusion group. Another possible explanation, in view of the open study design, is that the institution of insulin was paralleled by an improvement in general patient care. If this is the case, however, it should not be seen as a bias but rather as part of a comprehensive care programme for diabetic patients with myocardial infarction. The similarity in concomitant treatment (including revascularisation procedures) between the two groups makes this factor less likely as a major contributor. Future studies should be designed to elucidate whether an acute or a long term metabolic effect is responsible for the net result. They should also focus on specific pathophysiological mechanisms behind the beneficial effects we have seen.

In summary, insulin-glucose infusion followed by intensive subcutaneous insulin treatment in diabetic patients with acute myocardial infarction improves long term survival by nearly a third, and the effect seems to last for at least 3.5 years. Even more important the absolute reduction in mortality was 11%, implying one saved life for nine patients treated according to the DIGAMI protocol. The reduction in mortality is most apparent in patients without previous insulin treatment and at a low cardiovascular risk.

▶ Acknowledgements

Funding: Swedish Heart-Lung Foundation and Hoechst Marion Roussel Sweden.

Conflict of interest: None.

▶ References

1. Malmberg K, Ryden L. Myocardial infarction in patients with diabetes mellitus. *Eur Heart J* 1988;9:256-64.
2. Karlson BW, Herlitz J, Hjalmarson A. Prognosis of acute myocardial infarction in diabetic and non-diabetic patients. *Diabet Med* 1993;10(5):449-54.
3. Rytter L, Beck-Nielsen H, Troelsen S. Diabetic patients and myocardial infarction. *Acta Endocrinologica* 1984;suppl 262:83-7.
4. Herlitz J, Malmberg K, Karlsson B, Ryden L, Hjalmarsson A. Mortality and morbidity during a five year follow-up of diabetics with myocardial infarction. *Acta Med Scand* 1988;24:31-8.
5. Ulvenstam G, Aberg A, Bergstrand R, Johansson S, Pennert K, Vedin A, *et al.* Long-term prognosis after myocardial infarction in men with diabetes mellitus. *Diabetes* 1985;34:787-92. [Abstract]
6. Orlander PR, Goff DC, Morrissey M, Ramsey DJ, Wear ML, Labarthe DR, *et al.* The relation of diabetes to the severity of acute myocardial infarction and post-myocardial infarction survival in Mexican-Americans and non-Hispanic whites. The Corpus Christi heart project. *Diabetes* 1994;43(7):897-902.
7. Jaffe A, Spadaro J, Schechtman K, Roberts R, Geltman E, Sobel B. Increased congestive heart failure after myocardial infarction of modest extent in patients with diabetes mellitus. *Am Heart J* 1984;108:31-7.
8. Abbud Z, Shindler D, Wilson A, Kostis J. Effect of diabetes mellitus on short and long term mortality rates of patients with acute myocardial infarction: a statewide study. *Am Heart J* 1995;130:51-8.
9. Smith J, Marcus F, Serokman R. Prognosis of patients with diabetes mellitus after acute myocardial infarction. *Am J Cardiol* 1984;54:718-21.
10. Granger CB, Califf RM, Young S, Candela R, Samaha J, Worley S, *et al.* Outcome of patients with diabetes mellitus and acute myocardial infarction treated with thrombolytic agents. The thrombolysis and angioplasty in myocardial infarction (TAMI) study group. *J Am Coll Cardiol* 1993;21(4):920-5.
11. Singer D, Moulton A, Nathan D. Diabetic myocardial infarction. Interaction of diabetes with other preinfarction risk factors. *Diabetes* 1989;38:350-7. [Abstract]
12. Stone P, Muller J, Hartwell T, York B, Rutherford J, Parker C, *et al.* The effect of diabetes mellitus on prognosis and serial left ventricular function after acute myocardial infarction: contribution of both coronary disease and diastolic left ventricular dysfunction to the adverse prognosis. *JACC* 1989;14:49-57. [Abstract]
13. Savage M, Krolewski A, Kenien G, Lebeis M, Christlieb R, Lewis S. Acute myocardial infarction in diabetes mellitus and significance of congestive heart failure as a prognostic factor. *Am J Cardiol* 1988;62:665-9.
14. Jacoby R, Nesto R. Acute myocardial infarction in the diabetic patient: pathophysiology, clinical course and prognosis. *J Am Coll Cardiol* 1992;20:736-44.
15. Malmberg K, Effendic S, Ryden L. Feasibility of insulin-glucose infusion in diabetic patients with acute myocardial infarction. *Diabetes Care* 1994;17:1007-14. [Abstract]
16. Malmberg K, Ryden L, Efendic S, Herlitz J, Nicol P, Waldenstrom A, *et al.* A randomised trial of insulin-glucose infusion followed by subcutaneous insulin treatment in diabetic patients with acute myocardial infarction: effects on one year mortality. *J Am Coll Cardiol* 1995;26:57-65.
17. Malmberg K, Ryden L, Hamsten A, Herlitz J, Waldenstrom A, Wedel H. Effects of insulin treatment on cause specific one-year mortality and morbidity in diabetic patients with acute myocardial

▶ Top
▶ Abstract
▶ Introduction
▶ Subjects and methods
▶ Results
▶ Discussion
▪ References

- infarction. *Eur Heart J* 1996;17:1337-4. [Abstract/Free Full Text]
18. Cox D. Regression models and life-tables. *J Roy Stat Soc (B)* 1972;34:187-220.
 19. Uusitupa M, Niskanen L, Siitonen O, Voutilainen E, Pyorala K. Ten year cardiovascular mortality in relation to risk factors and abnormalities in lipoprotein composition in type 2 (non-insulin-dependent) diabetic and non-diabetic subjects. *Diabetologia* 1993;36:1175-84.
 20. Kuusisto J, Mykkanen L, Pyorala K, Laakso M. NIDDM and its metabolic control predict coronary heart disease in elderly subjects. *Diabetes* 1994;43(8):960-7.
 21. Andersson D, Svardsudd K. Long-term glycaemic control relates to mortality in type II diabetes. *Diabetes Care* 1995;18:1534-3.
 22. Gall M-A, Borch-Johnsen K, Hougaard P, Nielsen F, Parving H. Albuminuria and poor glycaemic control predict mortality in NIDDM. *Diabetes* 1995;44:1303-9. [Abstract]
 23. The Diabetes Control and Complication Trial (DCCT) Research Group. Effect of intensive diabetes management on macrovascular events and risk factors in the diabetes control and complication trial. *Am J Cardiol* 1995;75:894-903.
 24. Rogers W, Segal P, McDaniel H, Mantel J, Russet R, Rackley C. Prospective randomised trial of glucose-insulin-potassium in acute myocardial infarction. *Am J Cardiol* 1979;43:801-8.
 25. Lindstrom T. Insulin treatment of patients with type 2 diabetes: risks and benefits. Linköping: Linköping University, 1993. (Thesis.)
 26. Davi G, Catalan I, Averna M, Notarbartolo A, Strano A, Ciabattini G, *et al.* Tromboxane biosynthesis and platelet function in type II diabetes mellitus. *N Engl J Med* 1990;322:1769-74.
 27. Jain SK, Nagi DK, Slavin BM, Lumb PJ, Yudkin JS. Insulin therapy in type 2 diabetic subjects suppresses plasminogen activator inhibitor (PAI1) activity and proinsulin-like molecules independently of glycaemic control. *Diabet Med* 1993;10(1):27-32.

(Accepted 17 February 1997)

 CiteULike  Compre  Connotea  Del.icio.us  Digg  Reddit  StumbleUpon  Technorati [What's this?](#)

Relevant Article

Drivers who take insulin must tell Driver and Vehicle Licensing Agency

N Essex, P J Watkins, and J Durston
BMJ 2000 320: 1148. [Extract] [Full Text]

This article has been cited by other articles:

- Chiasson, J.-L. (2009). Early Insulin Use in Type 2 Diabetes: What are the cons?. *Diabetes Care* 32: S270-S274 [Full text]
- Ballweg, J. A., Ittenbach, R. F., Bernbaum, J., Gerdes, M., Dominguez, T. E., Zackai, E. H., Clancy, R. R., Gaynor, J. W. (2009). Hyperglycaemia after Stage I palliation does not adversely affect neurodevelopmental outcome at 1 year of age in patients with single-ventricle physiology. *Eur. J. Cardiothorac. Surg.* 36: 688-693 [Abstract] [Full text]
- Vriesendorp, T M, Roos, Y B, Kruyt, N D, Biessels, G J, Kappelle, L J, Vermeulen, M, Holleman, F, DeVries, J H, Hoekstra, J B L (2009). Efficacy and safety of two 5 day insulin dosing regimens to achieve strict glycaemic control in patients with acute ischaemic stroke. *J. Neurol. Neurosurg. Psychiatry* 80: 1040-1043 [Abstract] [Full text]
- Szabo, Z., Andersson, R. G. G., Arnqvist, H. J. (2009). Intraoperative muscle and fat metabolism in diabetic patients during coronary artery bypass grafting surgery: a parallel microdialysis and organ

balance study. *Br J Anaesth* 103: 166-172 [Abstract] [Full text]

- Summers, D., Leonard, A., Wentworth, D., Saver, J. L., Simpson, J., Spilker, J. A., Hock, N., Miller, E., Mitchell, P. H., on behalf of the American Heart Association Council, (2009). Comprehensive Overview of Nursing and Interdisciplinary Care of the Acute Ischemic Stroke Patient: A Scientific Statement From the American Heart Association. *Stroke* 40: 2911-2944 [Full text]
- Mowery, N. T., Dortch, M. J., Dossett, L. A., Norris, P. R., Diaz, J. J. Jr, Morris, J. A. Jr, May, A. K. (2009). Review of a Large Clinical Series: Insulin Resistance Despite Tight Glucose Control Is Associated With Mortality in Critically Ill Surgical Patients. *J Intensive Care Med* 24: 242-251 [Abstract]
- Bloomgarden, Z. T. (2009). Cardiovascular Disease, Neuropathy, and Retinopathy. *Diabetes Care* 32: e64-e68 [Full text]
- Fowler, M. J. (2009). Inpatient Diabetes Management. *Clin. Diabetes* 27: 119-122 [Full text]
- Moghissi, E. S., Korytkowski, M. T., DiNardo, M., Einhorn, D., Hellman, R., Hirsch, I. B., Inzucchi, S. E., Ismail-Beigi, F., Kirkman, M. S., Umpierrez, G. E. (2009). American Association of Clinical Endocrinologists and American Diabetes Association Consensus Statement on Inpatient Glycemic Control. *Diabetes Care* 32: 1119-1131 [Full text]
- Kosiborod, M., Inzucchi, S. E., Goyal, A., Krumholz, H. M., Masoudi, F. A., Xiao, L., Spertus, J. A. (2009). Relationship Between Spontaneous and Iatrogenic Hypoglycemia and Mortality in Patients Hospitalized With Acute Myocardial Infarction. *JAMA* 301: 1556-1564 [Abstract] [Full text]
- Nathan, D. M. (2009). Progress in Diabetes Research--What's Next. *JAMA* 301: 1599-1601 [Full text]
- Kosiborod, M., Inzucchi, S. E., Spertus, J. A., Wang, Y., Masoudi, F. A., Havranek, E. P., Krumholz, H. M. (2009). Elevated Admission Glucose and Mortality in Elderly Patients Hospitalized With Heart Failure. *Circulation* 119: 1899-1907 [Abstract] [Full text]
- Kosiborod, M., Inzucchi, S. E., Krumholz, H. M., Masoudi, F. A., Goyal, A., Xiao, L., Jones, P. G., Fiske, S., Spertus, J. A. (2009). Glucose Normalization and Outcomes in Patients With Acute Myocardial Infarction. *Arch Intern Med* 169: 438-446 [Abstract] [Full text]
- Raz, I., Wilson, P. W.F., Strojek, K., Kowalska, I., Bozikov, V., Gitt, A. K., Jermendy, G., Campaigne, B. N., Kerr, L., Milicevic, Z., Jacober, S. J. (2009). Effects of Prandial Versus Fasting Glycemia on Cardiovascular Outcomes in Type 2 Diabetes: The HEART2D trial. *Diabetes Care* 32: 381-386 [Abstract] [Full text]
- Ceriello, A., Zarich, S. W., Testa, R. (2009). Lowering glucose to prevent adverse cardiovascular outcomes in a critical care setting.. *J Am Coll Cardiol* 53: S9-13 [Abstract] [Full text]
- Ricci, Z., Ronco, C. (2009). Kidney diseases beyond nephrology: intensive care. *Nephrol Dial Transplant* 24: 391-395 [Full text]
- American Diabetes Association, (2009). Standards of Medical Care in Diabetes--2009. *Diabetes Care* 32: S13-S61 [Full text]
- Authors/Task Force Members, , Van de Werf, F., Bax, J., Betriu, A., Blomstrom-Lundqvist, C., Crea, F., Falk, V., Filippatos, G., Fox, K., Huber, K., Kastrati, A., Rosengren, A., Steg, P. G.,

Tubaro, M., Verheugt, F., Weidinger, F., Weis, M., ESC Committee for Practice Guidelines (CPG), , Vahanian, A., Camm, J., De Caterina, R., Dean, V., Dickstein, K., Filippatos, G., Funck-Brentano, C., Hellems, I., Kristensen, S. D., McGregor, K., Sechtem, U., Silber, S., Tendera, M., Widimsky, P., Zamorano, J. L., Document Reviewers, , Silber, S., Aguirre, F. V., Al-Attar, N., Alegria, E., Andreotti, F., Benzer, W., Breithardt, O., Danchin, N., Mario, C. D., Dudek, D., Gulba, D., Halvorsen, S., Kaufmann, P., Kornowski, R., Lip, G. Y. H., Rutten, F. (2008). Management of acute myocardial infarction in patients presenting with persistent ST-segment elevation: The Task Force on the management of ST-segment elevation acute myocardial infarction of the European Society of Cardiology. *Eur Heart J* 29: 2909-2945 [Full text]

- Kosiborod, M. (2008). Blood glucose and its prognostic implications in patients hospitalised with acute myocardial infarction. *Diabetes and Vascular Disease Research* 5: 269-275 [Abstract]
- Goyal, A., Nerenberg, K., Gerstein, H. C, Umpierrez, G., Wilson, P. W. (2008). Insulin therapy in acute coronary syndromes: an appraisal of completed and ongoing randomised trials with important clinical end points. *Diabetes and Vascular Disease Research* 5: 276-284 [Abstract]
- Anzalone, P. (2008). Equivalence of Earlobe Site Blood Glucose Testing With Finger Stick. *Clin Nurs Res* 17: 251-261 [Abstract]
- Wexler, D. J., Nathan, D. M., Grant, R. W., Regan, S., Van Leuvan, A. L., Cagliero, E. (2008). Prevalence of Elevated Hemoglobin A1c among Patients Admitted to the Hospital without a Diagnosis of Diabetes. *J. Clin. Endocrinol. Metab.* 93: 4238-4244 [Abstract] [Full text]
- Lansang, M. C., Umpierrez, G. E. (2008). Management of Inpatient Hyperglycemia in Noncritically Ill Patients. *Diabetes Spectr.* 21: 248-255 [Abstract] [Full text]
- Triplitt, C., Alvarez, C. A. (2008). Best Practices for Lowering the Risk of Cardiovascular Disease in Diabetes. *Diabetes Spectr.* 21: 177-189 [Abstract] [Full text]
- Van Gaal, L. F, Gutkin, S. W, Nauck, M. A (2008). Exploiting the antidiabetic properties of incretins to treat type 2 diabetes mellitus: glucagon-like peptide 1 receptor agonists or insulin for patients with inadequate glycemic control?. *Eur J Endocrinol* 158: 773-784 [Abstract] [Full text]
- Kloner, R. A., Nesto, R. W. (2008). Glucose-Insulin-Potassium for Acute Myocardial Infarction: Continuing Controversy Over Cardioprotection. *Circulation* 117: 2523-2533 [Full text]
- Rossano, J. W., Taylor, M. D., Smith, E. O., Fraser, C. D. Jr., McKenzie, E. D., Price, J. F., Dickerson, H. A., Nelson, D. P., Mott, A. R. (2008). Glycemic profile in infants who have undergone the arterial switch operation: Hyperglycemia is not associated with adverse events.. *J. Thorac. Cardiovasc. Surg.* 135: 739-745 [Abstract] [Full text]
- Desachy, A., Vuagnat, A. C., Ghazali, A. D., Baudin, O. T., Longuet, O. H., Calvat, S. N., Gissot, V. (2008). Accuracy of Bedside Glucometry in Critically Ill Patients: Influence of Clinical Characteristics and Perfusion Index. *Mayo Clin Proc.* 83: 400-405 [Abstract] [Full text]
- Deedwania, P., Kosiborod, M., Barrett, E., Ceriello, A., Isley, W., Mazzone, T., Raskin, P. (2008). Hyperglycemia and Acute Coronary Syndrome: A Scientific Statement From the American Heart Association Diabetes Committee of the Council on Nutrition, Physical Activity, and Metabolism. *Circulation* 117: 1610-1619 [Abstract] [Full text]

- Kosiborod, M., Inzucchi, S. E., Krumholz, H. M., Xiao, L., Jones, P. G., Fiske, S., Masoudi, F. A., Marso, S. P., Spertus, J. A. (2008). Glucometrics in Patients Hospitalized With Acute Myocardial Infarction: Defining the Optimal Outcomes-Based Measure of Risk. *Circulation* 117: 1018-1027 [Abstract] [Full text]
- Milicevic, Z., Raz, I., Beattie, S. D., Campaigne, B. N., Sarwat, S., Gromniak, E., Kowalska, I., Galic, E., Tan, M., Hanefeld, M. (2008). Natural History of Cardiovascular Disease in Patients With Diabetes: Role of hyperglycemia. *Diabetes Care* 31: S155-S160 [Abstract] [Full text]
- Stirban, A. O., Tschoepe, D. (2008). Cardiovascular Complications in Diabetes: Targets and interventions. *Diabetes Care* 31: S215-S221 [Abstract] [Full text]
- Inzucchi, S. E., McGuire, D. K. (2008). New Drugs for the Treatment of Diabetes: Part II: Incretin-Based Therapy and Beyond. *Circulation* 117: 574-584 [Abstract] [Full text]
- American Diabetes Association, (2008). Standards of Medical Care in Diabetes--2008. *Diabetes Care* 31: S12-S54 [Full text]
- Ballweg, J. A., Wernovsky, G., Ittenbach, R. F., Bernbaum, J., Gerdes, M., Gallagher, P. R., Dominguez, T. E., Zackai, E., Clancy, R. R., Nicolson, S. C., Spray, T. L., Gaynor, J. W. (2007). Hyperglycemia After Infant Cardiac Surgery Does Not Adversely Impact Neurodevelopmental Outcome. *Ann. Thorac. Surg.* 84: 2052-2058 [Abstract] [Full text]
- Shine, T. S., Uchikado, M., Crawford, C. C., Murray, M. J (2007). Importance of Perioperative Blood Glucose Management in Cardiac Surgical Patients. *Asian Cardiovasc. Thorac. Ann.* 15: 534-538 [Abstract] [Full text]
- Grainger, A., Eiden, K., Kemper, J., Reeds, D. (2007). A Pilot Study to Evaluate the Effectiveness of Glargine and Multiple Injections of Lispro in Patients With Type 2 Diabetes Receiving Tube Feedings in a Cardiovascular Intensive Care Unit. *Nutr Clin Pract* 22: 545-552 [Abstract] [Full text]
- Chamberlain, J. (2007). Anyone Have a Pen?. *DOC News* 4: 3-3 [Full text]
- Anderson, J. L., Adams, C. D., Antman, E. M., Bridges, C. R., Califf, R. M., Casey, D. E. Jr, Chavey, W. E. II, Fesmire, F. M., Hochman, J. S., Levin, T. N., Lincoff, A. M., Peterson, E. D., Theroux, P., Wenger, N. K., Wright, R. S., Smith, S. C. Jr, Jacobs, A. K., Adams, C. D., Anderson, J. L., Antman, E. M., Halperin, J. L., Hunt, S. A., Krumholz, H. M., Kushner, F. G., Lytle, B. W., Nishimura, R., Ornato, J. P., Page, R. L., Riegel, B. (2007). ACC/AHA 2007 Guidelines for the Management of Patients With Unstable Angina/Non-ST-Elevation Myocardial Infarction: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to Revise the 2002 Guidelines for the Management of Patients With Unstable Angina/Non-ST-Elevation Myocardial Infarction) Developed in Collaboration with the American College of Emergency Physicians, the Society for Cardiovascular Angiography and Interventions, and the Society of Thoracic Surgeons Endorsed by the American Association of Cardiovascular and Pulmonary Rehabilitation and the Society for Academic Emergency Medicine. *J Am Coll Cardiol* 50: e1-e157 [Full text]
- Vanhorebeek, I., Langouche, L., Van den Berghe, G. (2007). Tight Blood Glucose Control With Insulin in the ICU: Facts and Controversies. *Chest* 132: 268-278 [Abstract] [Full text]

- Monge, M., Ledeme, N., Mazouz, H., Lalau, J.-D., Moubarak, M., Presne, C., Fournier, A., Maziere, J.-C., Choukroun, G., Westeel, P.-F. (2007). Insulin maintains plasma antioxidant capacity at an early phase of kidney transplantation. *Nephrol Dial Transplant* 22: 1979-1985 [Abstract] [Full text]
- Authors/Task Force Members, Bassand, J.-P., Hamm, C. W., Ardissino, D., Boersma, E., Budaj, A., Fernandez-Aviles, F., Fox, K. A.A., Hasdai, D., Ohman, E. M., Wallentin, L., Wijns, W., ESC Committee for Practice Guidelines (CPG), Vahanian, A., Camm, J., De Caterina, R., Dean, V., Dickstein, K., Filippatos, G., Kristensen, S. D., Widimsky, P., McGregor, K., Sechtem, U., Tendera, M., Hellems, I., Gomez, J. L. Z., Silber, S., Funck-Brentano, C., Document Reviewers, Kristensen, S. D., Andreotti, F., Benzer, W., Bertrand, M., Betriu, A., De Caterina, R., DeSutter, J., Falk, V., Ortiz, A. F., Gitt, A., Hasin, Y., Huber, K., Kornowski, R., Lopez-Sendon, J., Morais, J., Nordrehaug, J. E., Silber, S., Steg, P. G., Thygesen, K., Tubaro, M., Turpie, A. G.G., Verheugt, F., Windecker, S. (2007). Guidelines for the diagnosis and treatment of non-ST-segment elevation acute coronary syndromes: The Task Force for the Diagnosis and Treatment of Non-ST-Segment Elevation Acute Coronary Syndromes of the European Society of Cardiology. *Eur Heart J* 28: 1598-1660 [Full text]
- Authors/Task Force Members, Ryden, L., Standl, E., Bartnik, M., Berghe, G. V. d., Betteridge, J., de Boer, M.-J., Cosentino, F., Jonsson, B., Laakso, M., Malmberg, K., Priori, S., Ostergren, J., Tuomilehto, J., Thrainsdottir, I., Other Contributors, Vanhorebeek, I., Stramba-Badiale, M., Lindgren, P., Qiao, Q., ESC Committee for Practice Guidelines (CPG), Priori, S. G., Blanc, J.-J., Budaj, A., Camm, J., Dean, V., Deckers, J., Dickstein, K., Lekakis, J., McGregor, K., Metra, M., Morais, J., Osterspey, A., Tamargo, J., Zamorano, J. L., Document Reviewers, Deckers, J. W., Bertrand, M., Charbonnel, B., Erdmann, E., Ferrannini, E., Flyvbjerg, A., Gohlke, H., Juanatey, J. R. G., Graham, I., Monteiro, P. F., Parhofer, K., Pyorala, K., Raz, I., Schernthaner, G., Volpe, M., Wood, D. (2007). Guidelines on diabetes, pre-diabetes, and cardiovascular diseases: full text: The Task Force on Diabetes and Cardiovascular Diseases of the European Society of Cardiology (ESC) and of the European Association for the Study of Diabetes (EASD). *Eur Heart J Suppl* 9: C3-C74 [Full text]
- Campbell, R. K. (2007). Etiology and effect on outcomes of hyperglycemia in hospitalized patients. *Am J Health Syst Pharm* 64: S4-S8 [Abstract] [Full text]
- Magee, M. F. (2007). Hospital protocols for targeted glycemic control: Development, implementation, and models for cost justification. *Am J Health Syst Pharm* 64: S15-S20 [Abstract] [Full text]
- Boord, J. B., Sharifi, M., Greevy, R. A., Griffin, M. R., Lee, V. K., Webb, T. A., May, M. E., Waitman, L. R., May, A. K., Miller, R. A. (2007). Computer-based Insulin Infusion Protocol Improves Glycemia Control over Manual Protocol. *J Am Med Inform Assoc* 14: 278-287 [Abstract] [Full text]
- Boord, J. B., Sharifi, M., Greevy, R. A., Griffin, M. R., Lee, V. K., Webb, T. A., May, M. E., Waitman, L. R., May, A. K., Miller, R. A. (2007). Computer-based Insulin Infusion Protocol Improves Glycemia Control over Manual Protocol. *J. Am. Med. Inform. Assoc.* 14: 278-287 [Abstract] [Full text]

- Lansang, M. C., Harrell, H. (2007). Knowledge on Inpatient Diabetes Among Fourth-Year Medical Students. *Diabetes Care* 30: 1088-1091 [Abstract] [Full text]
- Raman, P., Krukovets, I., Marinic, T. E., Bornstein, P., Stenina, O. I. (2007). Glycosylation Mediates Up-regulation of a Potent Antiangiogenic and Proatherogenic Protein, Thrombospondin-1, by Glucose in Vascular Smooth Muscle Cells. *J. Biol. Chem.* 282: 5704-5714 [Abstract] [Full text]
- Wexler, D. J., Meigs, J. B., Cagliero, E., Nathan, D. M., Grant, R. W. (2007). Prevalence of Hyper- and Hypoglycemia Among Inpatients With Diabetes: A national survey of 44 U.S. hospitals. *Diabetes Care* 30: 367-369 [Full text]
- Authors/Task Force Members, , Ryden, L., Standl, E., Bartnik, M., Van den Berghe, G., Betteridge, J., de Boer, M.-J., Cosentino, F., Jonsson, B., Laakso, M., Malmberg, K., Priori, S., Ostergren, J., Tuomilehto, J., Thrainsdottir, I., Other Contributors, , Vanhorebeek, I., Stramba-Badiale, M., Lindgren, P., Qiao, Q., ESC Committee for Practice Guidelines (CPG), , Priori, S. G., Blanc, J.-J., Budaj, A., Camm, J., Dean, V., Deckers, J., Dickstein, K., Lekakis, J., McGregor, K., Metra, M., Morais, J., Osterspey, A., Tamargo, J., Zamorano, J. L., Document Reviewers, , Deckers, J. W., Bertrand, M., Charbonnel, B., Erdmann, E., Ferrannini, E., Flyvbjerg, A., Gohlke, H., Juanatey, J. R. G., Graham, I., Monteiro, P. F., Parhofer, K., Pyorala, K., Raz, I., Schernthaner, G., Volpe, M., Wood, D. (2007). Guidelines on diabetes, pre-diabetes, and cardiovascular diseases: executive summary: The Task Force on Diabetes and Cardiovascular Diseases of the European Society of Cardiology (ESC) and of the European Association for the Study of Diabetes (EASD). *Eur Heart J* 28: 88-136 [Full text]
- Lubitz, C. C., Seley, J. J., Rivera, C., Sinha, N., Brillon, D. J. (2007). The Perils of Inpatient Hyperglycemia Management: How We Turned Apathy Into Action. *Diabetes Spectr.* 20: 18-21 [Abstract] [Full text]
- American Diabetes Association, (2007). Standards of Medical Care in Diabetes--2007. *Diabetes Care* 30: S4-S41 [Full text]
- Dutka, D. P., Pitt, M., Pagano, D., Mongillo, M., Gathercole, D., Bonser, R. S., Camici, P. G. (2006). Myocardial Glucose Transport and Utilization in Patients With Type 2 Diabetes Mellitus, Left Ventricular Dysfunction, and Coronary Artery Disease. *J Am Coll Cardiol* 48: 2225-2231 [Abstract] [Full text]
- Inzucchi, S. E. (2006). Management of Hyperglycemia in the Hospital Setting. *NEJM* 355: 1903-1911 [Full text]
- Oliver, M.F. (2006). Sudden cardiac death: the lost fatty acid hypothesis. *QJM* 99: 701-709 [Abstract] [Full text]
- Hiesmayr, M. J. (2006). Hyperglycemia and outcome after myocardial infarction and cardiac surgery: so what?. *SEMIN CARDIOTHORAC VASC ANESTH* 10: 220-223 [Abstract]
- Soran, H., Barzangy, B., Younis, N. (2006). The benefits of insulin therapy following acute myocardial infarction revisited. *QJM* 99: 635-637 [Full text]
- The ACE/ADA Task Force on Inpatient Diabetes, (2006). American College of Endocrinology and

American Diabetes Association Consensus Statement on Inpatient Diabetes and Glycemic Control: A call to action. *Diabetes Care* 29: 1955-1962 [Full text]

- Valensi, P., Slama, G. (2006). Review: Sulphonylureas and cardiovascular risk: facts and controversies. *British Journal of Diabetes & Vascular Disease* 6: 159-165 [Abstract]
- Davis, S. N., Renda, S. M. (2006). Psychological Insulin Resistance: Overcoming Barriers to Starting Insulin Therapy.. *The Diabetes Educator* 32: 146S-152S [Full text]
- Yngen, M., Norhammar, A., Hjendahl, P., Wallen, N H. (2006). Effects of improved metabolic control on platelet reactivity in patients with type 2 diabetes mellitus following coronary angioplasty. *Diabetes and Vascular Disease Research* 3: 52-56 [Abstract]
- Osburne, R. C., Cook, C. B., Stockton, L., Baird, M., Harmon, V., Keddo, A., Pounds, T., Lowey, L., Reid, J., McGowan, K. A., Davidson, P. C. (2006). Improving hyperglycemia management in the intensive care unit: preliminary report of a nurse-driven quality improvement project using a redesigned insulin infusion algorithm.. *The Diabetes Educator* 32: 394-403 [Abstract] [Full text]
- Bloomgarden, Z. T. (2006). Cardiovascular Disease. *Diabetes Care* 29: 1160-1166 [Full text]
- Egi, M., Bellomo, R., Stachowski, E., French, C. J., Hart, G., Stow, P., Li, W., Bates, S. (2006). Intensive Insulin Therapy in Postoperative Intensive Care Unit Patients: A Decision Analysis. *Am. J. Respir. Crit. Care Med.* 173: 407-413 [Abstract] [Full text]
- Lautamaki, R., Airaksinen, K.E. J., Seppanen, M., Toikka, J., Harkonen, R., Luotolahti, M., Borra, R., Sundell, J., Knuuti, J., Nuutila, P. (2006). Insulin Improves Myocardial Blood Flow in Patients With Type 2 Diabetes and Coronary Artery Disease. *Diabetes* 55: 511-516 [Abstract] [Full text]
- Langouche, L., Vanhorebeek, I., Van den Berghe, G. (2006). Glycaemic control in trauma patients, is there a role?. *Trauma* 8: 13-19 [Abstract]
- Kendall, D. M. (2006). Thiazolidinediones: The case for early use. *Diabetes Care* 29: 154-157 [Full text]
- Kairamkonda, V (2006). Does continuous insulin infusion improve glycaemic control and nutrition in hyperglycaemic very low birth weight infants?. *Arch. Dis. Child.* 91: 76-79 [Full text]
- American Diabetes Association, (2006). Standards of Medical Care in Diabetes-2006. *Diabetes Care* 29: S4-S42 [Full text]
- Monteiro, P., Goncalves, L., Providencia, L. A (2005). Diabetes and cardiovascular disease: the road to cardioprotection. *Heart* 91: 1621-1625 [Full text]
- Freire, A. X., Bridges, L., Umpierrez, G. E., Kuhl, D., Kitabchi, A. E. (2005). Admission Hyperglycemia and Other Risk Factors as Predictors of Hospital Mortality in a Medical ICU Population. *Chest* 128: 3109-3116 [Abstract] [Full text]
- Bartnik, M., Malmberg, K., Ryden, L. (2005). Management of patients with type 2 diabetes after acute coronary syndromes. *Diabetes and Vascular Disease Research* 2: 144-154 [Abstract]
- Choi, J.-S., Cho, K. R., Kim, K.-B. (2005). Does Diabetes Affect the Postoperative Outcomes After Total Arterial Off-Pump Coronary Bypass Surgery in Multivessel Disease?. *Ann. Thorac. Surg.* 80: 1353-1360 [Abstract] [Full text]
- Martin, C. L. (2005). Case Study: Whose Diabetes Is It Anyway? Diabetes Self-Management After

a Stroke. *Diabetes Spectr.* 18: 196-198 [Full text]

- Davidson, P. C., Steed, R. D., Bode, B. W. (2005). Glucomander: A computer-directed intravenous insulin system shown to be safe, simple, and effective in 120,618 h of operation. *Diabetes Care* 28: 2418-2423 [Abstract] [Full text]
- Meier, J. J., Deifuss, S., Klamann, A., Launhardt, V., Schmiegel, W. H., Nauck, M. A. (2005). Plasma Glucose at Hospital Admission and Previous Metabolic Control Determine Myocardial Infarct Size and Survival in Patients With and Without Type 2 Diabetes: The Langendreer Myocardial Infarction and Blood Glucose in Diabetic Patients Assessment (LAMBDA) . *Diabetes Care* 28: 2551-2553 [Full text]
- Suri, R. S., Clark, W. F., Barrowman, N., Mahon, J. L., Thiessen-Philbrook, H. R., Rosas-Arellano, M. P., Zarnke, K., Garland, J. S., Garg, A. X. (2005). Diabetes During Diarrhea-Associated Hemolytic Uremic Syndrome: A systematic review and meta-analysis. *Diabetes Care* 28: 2556-2562 [Abstract] [Full text]
- Kosiborod, M., Rathore, S. S., Inzucchi, S. E., Masoudi, F. A., Wang, Y., Havranek, E. P., Krumholz, H. M. (2005). Admission Glucose and Mortality in Elderly Patients Hospitalized With Acute Myocardial Infarction: Implications for Patients With and Without Recognized Diabetes. *Circulation* 111: 3078-3086 [Abstract] [Full text]
- Ross, A. M., Gibbons, R. J., Stone, G. W., Kloner, R. A., Alexander, R. W., for the AMISTAD-II Investigators, (2005). A Randomized, Double-Blinded, Placebo-Controlled Multicenter Trial of Adenosine as an Adjunct to Reperfusion in the Treatment of Acute Myocardial Infarction (AMISTAD-II). *J Am Coll Cardiol* 45: 1775-1780 [Abstract] [Full text]
- Malmberg, K., Ryden, L., Wedel, H., Birkeland, K., Bootsma, A., Dickstein, K., Efendic, S., Fisher, M., Hamsten, A., Herlitz, J., Hildebrandt, P., MacLeod, K., Laakso, M., Torp-Pedersen, C., Waldenstrom, A., for the DIGAMI 2 Investigators, (2005). Intense metabolic control by means of insulin in patients with diabetes mellitus and acute myocardial infarction (DIGAMI 2): effects on mortality and morbidity. *Eur Heart J* 26: 650-661 [Abstract] [Full text]
- Humpert, P. M., Neuwirth, R., Battista, M. J., Voronko, O., von Eynatten, M., Konrade, I., Rudofsky, G. Jr, Wendt, T., Hamann, A., Morcos, M., Nawroth, P. P., Bierhaus, A. (2005). SDF-1 Genotype Influences Insulin-Dependent Mobilization of Adult Progenitor Cells in Type 2 Diabetes. *Diabetes Care* 28: 934-936 [Full text]
- Inzucchi, S. E., Rosenstock, J. (2005). Counterpoint: Inpatient Glucose Management: A premature call to arms?. *Diabetes Care* 28: 976-979 [Full text]
- Stoneking, K. (2005). Initiating basal insulin therapy in patients with type 2 diabetes mellitus. *Am J Health Syst Pharm* 62: 510-518 [Abstract] [Full text]
- Ceriello, A. (2005). Acute hyperglycaemia: a 'new' risk factor during myocardial infarction. *Eur Heart J* 26: 328-331 [Abstract] [Full text]
- Bloomgarden, Z. T. (2005). Thiazolidinediones. *Diabetes Care* 28: 488-493 [Full text]
- Thompson, C. L., Dunn, K. C., Menon, M. C., Kearns, L. E., Braithwaite, S. S. (2005). Hyperglycemia in the Hospital. *Diabetes Spectr.* 18: 20-27 [Abstract] [Full text]

- Goldberg, P. A., Inzucchi, S. E. (2005). Selling Root Canals: Lessons Learned From Implementing a Hospital Insulin Infusion Protocol. *Diabetes Spectr.* 18: 28-33 [Abstract] [Full text]
- American Diabetes Association, (2005). Standards of Medical Care in Diabetes. *Diabetes Care* 28: S4-S36 [Full text]
- Ceriello, A. (2004). Insulin, Glycemic Control, and C-Reactive Protein During Myocardial Infarction. *Diabetes Care* 27: 3017-3018 [Full text]
- Carvalho, G., Schricker, T., Lazar, H. L., Chipkin, S. R., Fitzgerald, C. A., Bao, Y., Cabral, H., Apstein, C. (2004). Letter Regarding Article by Lazar et al, "Tight Glycemic Control in Diabetic Coronary Artery Bypass Graft Patients Improves Perioperative Outcomes and Decreases Recurrent Ischemic Events". *Circulation* 110: e505-e505 [Full text]
- Colagiuri, S. (2004). The prevalence of abnormal glucose regulation in patients with coronary artery disease across Europe. *Eur Heart J* 25: 1861-1862 [Full text]
- Hirsch, I. B. (2004). Were We Wrong About Insulin and Acute Myocardial Infarction?. *DOC News* 1: 4-5 [Full text]
- Savage, M W, Mah, P M, Weetman, A P, Newell-Price, J (2004). Endocrine emergencies. *Postgrad. Med. J.* 80: 506-515 [Abstract] [Full text]