APPENDIX A. SEARCH STRATEGY

Database: Ovid MEDLINE(R) <1950 to November Week 2 2007>
Search Strategy:
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1 exp insulin/ (130835)
2 exp hypoglycemic agents/ (151706)
3 exp Blood Glucose/ (98489)
4 (insulin or hypoglycemic agent$ or hypoglycaemic agent$ or glycemic control or glycaemic control).mp. [mp=title, original title, abstract, name of substance word, subject heading word] (243159)
5 1 or 2 or 3 or 4 (292506)
6 Critical Illness/ (8301)
7 critical care/ or intensive care/ (28092)
8 exp Perioperative Care/ (60582)
9 exp Postoperative Period/ (28181)
10 ((critical$ adj6 ill$) or critical care or icu or intensive care or burn unit$ or coronary care).mp. [mp=title, original title, abstract, name of substance word, subject heading word] (103498)
11 intensive care units/ or burn units/ or coronary care units/ or recovery room/ (27247)
12 postoperative complications/ or prosthesis-related infections/ or surgical wound dehiscence/ or surgical wound infection/ (252519)
13 (postoperative$ or post operative$).mp. [mp=title, original title, abstract, name of substance word, subject heading word] (457854)
14 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 (582795)
15 5 and 14 (5822)
16 randomized controlled trial.pt. (246761)
17 controlled clinical trial.pt. (77022)
18 randomized controlled trials.sh. (52472)
19 random allocation.sh. (59778)
20 double blind method.sh. (94781)
21 single blind method.sh. (11591)
22 16 or 17 or 18 or 19 or 20 or 21 (418296)
23 (animals not human).sh. (4261058)
24 22 not 23 (382274)
25 clinical trial.pt. (444490)
26 exp clinical trials/ (199910)
27 (clin$ adj25 trial$).ti,ab. (139332)
28 ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti,ab. (94254)
29 placebos.sh. (26956)
30 placebo$.ti,ab. (106977)
31 random$.ti,ab. (394441)
32 research design.sh. (50582)
33 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 (887876)
34 33 not 23 (778635)

35 34 or 24 (798240)
36 15 and 35 (979)
37 exp Myocardial Infarction/ (115916)
38 exp Hospitalization/ (107713)
39 exp Inpatients/ (6673)
40 exp Cerebrovascular Accident/ (44100)
41 cerebrovascular disorders/ or brain ischemia/ or exp "intracranial embolism and thrombosis"/ or exp intracranial hemorrhages/ (112871)
42 exp myocardial revascularization/ or exp coronary artery bypass/ (56866)
43 37 or 40 or 41 or 42 (300510)
44 5 and 43 (4061)
45 35 and 44 (657)
46 45 not 36 (544)
47 38 or 39 (113294)
48 5 and 47 (1078)
49 35 and 48 (202)
50 49 not (36 or 46) (114)
51 exp Hypoglycemia/ci, ep, et [Chemically Induced, Epidemiology, Etiology] (8651)
52 1 or 2 or 4 (250082)
53 51 and 52 (5520)
54 14 and 53 (180)
55 43 and 53 (41)
56 47 and 53 (65)
57 54 or 55 or 56 (276)
58 57 not (36 or 46 or 49) (254)
59 exp Hypoglycemia/ (17277)
60 52 and 59 (9545)
61 14 and 60 (285)
62 43 and 60 (86)
63 47 and 60 (97)
64 61 or 62 or 63 (445)
65 64 not 57 (169)
66 65 not (36 or 46 or 49) (152)
67 limit 36 to english language (865)
68 limit 46 to english language (476)
69 limit 50 to english language (104)
70 limit 58 to english language (215)
71 limit 66 to english language (113)
72 from 67 keep 1-865 (865)
73 from 68 keep 1-476 (476)
74 from 69 keep 1-104 (104)
75 from 70 keep 1-215 (215)
76 from 71 keep 1-113 (113)

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An additional search for adverse effects used the strategy above through line 71, followed by:

72 (ae or po or to).fs. (1254721)
73 exp Drug Toxicity/ (15829)
74 medical errors/ or medication errors/ (13158)
75 exp Drug Interactions/ (116890)
76 72 or 73 or 74 or 75 (1359022)
77 1 or 3 (186918)
78 6 or 7 or 8 or 9 or 11 or 12 (379861)
79 77 and 78 (2545)
80 76 and 79 (364)
81 limit 80 to english language (296)
82 limit 81 to humans (276)
83 15 and 76 (871)
84 limit 83 to english language (725)
85 limit 84 to humans (668)
86 85 not 82 (392)
87 from 82 keep 1-276 (276)
88 from 86 keep 1-392 (392)

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APPENDIX B. INCLUSION/EXCLUSION CRITERIA

Code	Include / Exclude	*Reason*
I	Include	Clinical trial, cohort study, systematic review/meta-analysis of studies that A. Were conducted in any of the following populations: 1. Acute myocardial infarction patients 2. Other patients in the medical intensive care unit 3. Post coronary artery bypass graft patients 4. Other patients in the surgical intensive care unit 5. Acute stroke patients 6. General medicine ward patients 7. General surgical ward patients B. Include any of the following interventions: 1. Continuous IV insulin infusion 2. GIK, GI 3. SQ insulin: sliding scale v. basal bolus C. Examine any of the following endpoints: 1. Final outcomes: mortality; cardiovascular events; CHF; disability (neuro-disability score); wound infection; sepsis; renal failure requiring HD 2. Intermediate outcomes: glucose level; length of stay; renal failure not requiring HD 3. Adverse effects – rates of hypoglycemia (any study design) D. To address KQ3, applied rigorous methodology (controlled clinical trials including RCTs)
I	Include	Unpublished research meeting I1 criteria
I	Include	Other (specify)
X1	Exclude	Study outcome does not meet I1 criteria – effects on nursing staff of IV-insulin infusion protocols, e.g.
X2	Exclude	Study population does not meet criteria
X3	Exclude	Type of intervention not within scope of review
X4	Exclude	Other (specify)
X5	Exclude	Non-English language, no abstract
X6	Exclude	Non-human, animal
X7	Exclude	Study design or publication type not applicable; no data
X8	Exclude	Non-systematic review or background article; poor-quality systematic review
X9	Exclude	Publication year outside of review time frame
X10	Exclude	Duplicate publication, subgroup analysis, or extension of already included parent study – these papers will be re-examined and abstracted along with parent study

APPENDIX C. USPSTF QUALITY RATING CRITERIA

Randomized Controlled Trials (RCTs) and Cohort Studies

Criteria

- Initial assembly of comparable groups**:** RCTs—adequate randomization, including concealment and whether potential confounders were distributed equally among groups; cohort studies—consideration of potential confounders with either restriction or measurement for adjustment in the analysis; consideration of inception cohorts
- Maintenance of comparable groups (includes attrition, cross-overs, adherence, contamination)
- Important differential loss to follow-up or overall high loss to follow-up
- Measurements: equal, reliable, and valid (includes masking of outcome assessment)
- Clear definition of interventions
- Important outcomes considered
- Analysis: adjustment for potential confounders for cohort studies, or intention-to-treat analysis for RCTs (i.e. analysis in which all participants in a trial are analyzed according to the intervention to which they were allocated, regardless of whether or not they completed the intervention)

Definition of ratings based on above criteria

Good: Meets all criteria: Comparable groups are assembled initially and maintained throughout the study (follow-up at least 80 percent); reliable and valid measurement instruments are used and applied equally to the groups; interventions are spelled out clearly; important outcomes are considered; and appropriate attention to confounders in analysis.

Fair: Studies will be graded "fair" if any or all of the following problems occur, without the important limitations noted in the "poor" category below: Generally comparable groups are assembled initially but some question remains whether some (although not major) differences occurred in follow-up; measurement instruments are acceptable (although not the best) and generally applied equally; some but not all important outcomes are considered; and some but not all potential confounders are accounted for.

Poor: Studies will be graded "poor" if any of the following major limitations exists: Groups assembled initially are not close to being comparable or maintained throughout the study; unreliable or invalid measurement instruments are used or not applied at all equally among groups (including not masking outcome assessment); and key confounders are given little or no attention.