=Electronic literature search=
(sepsis OR septic OR intensive care OR critical care) AND (glucose OR sugar OR glycemic OR insulin) AND (Bland Altman OR agreement OR validation OR reliability OR accuracy OR correlation OR Clarke grid OR bias) (publish data 2000/01/01-2012/8/31)

879 potentially relevant studies

716 studies excluded
(animal studies, non-clinical studies, non-English language papers, non-related studies)

116 studies excluded (studies in Infant or pediatric patients)

47 studies for full text review

26 studies excluded (reference was not laboratory blood glucose method, non-critically ill)

21 studies assessed the accuracy of blood glucose monitoring using ABGs and/or glucose meters using central laboratory methods as reference in adult critically ill patients.

- 11 studies using 1) International Organization for Standardization criteria, 2) error grid analysis or 3) percentage of values within 20 %of reference value
- 2 studies using percentage of values within 10 %of reference value
- 1 study using percentage of values within 20 mg/dL difference from reference value
- 7 studies using solely bias for evaluation

Figure 2; the comparisons of accuracy of point of blood glucose monitoring.

A)

Study or Subgroup	ABG Events	ABG Total	Glucometer (Capillary) Events	Glucometer (Capillary) Total	Weight	Odds Ratio M-H, Random, 95% CI
Slater-MacLean L (2008)	1	683	24	1656	40.0%	0.10 [0.01, 0.74]
Kanji S (2005)	1	115	32	118	39.7%	0.02 [0.00, 0.18]
Petersen JR (2008)	0	114	23	114	20.3%	0.02 [0.00, 0.28]
Total (95% CI)		912		1888	100.0%	0.04 [0.01, 0.14]
Total events	2		79			

Heterogeneity: Tau² = 0.00; Chi² = 1.43, df = 2 (P = 0.49); I² = 0%
Test for overall effect: Z = 5.01 (P < 0.00001)

Odds Ratio M-H, Random, 95% CI
0.01 0.1 1 10 100
Favours ABG — Favours Glucometer (Capillary)

B)

Study or Subgroup	ABG Events	ABG Total	Glucometer (Artery) Events	Glucometer (Artery) Total	Weight	Odds Ratio M-H, Random, 95% CI
Slater-MacLean L (2008)	1	683	1	2048	31.5%	3.00 [0.19, 48.05]
Kanji S (2005)	1	115	14	113	37.4%	0.06 [0.01, 0.48]
Petersen JR (2008)	0	114	13	114	31.1%	0.03 [0.00, 0.56]
Total (95% CI)		912		2275	100.0%	0.17 [0.01, 2.46]
Total events	2		28			

Heterogeneity: Tau² = 3.82; Chi² = 6.57, df = 2 (P = 0.04); I² = 70%
Test for overall effect: Z = 1.29 (P = 0.20)

Odds Ratio M-H, Random, 95% CI
0.01 0.1 1 10 100
Favours ABG — Favours Glucometer (Artery)

C)

Study or Subgroup	Glucometer (Artery) Events	Glucometer (Artery) Total	Glucometer (Capillary) Events	Glucometer (Capillary) Total	Weight	Odds Ratio M-H, Random, 95% CI
Slater-MacLean L (2008)	1	2048	24	1656	3.2%	0.03 [0.00, 0.25]
Kanji S (2005)	14	113	32	118	19.4%	0.38 [0.19, 0.76]
Petersen JR (2008)	13	114	23	114	17.7%	0.51 [0.24, 1.06]
Desachy A (2008)	13	232	41	273	21.0%	0.34 [0.18, 0.64]
PulziJúnior SA (2009)	3	38	9	38	6.3%	0.28 [0.07, 1.12]
Lonjaret L (2012)	35	302	75	302	32.4%	0.40 [0.26, 0.62]
Total (95% CI)		2847		2501	100.0%	0.36 [0.25, 0.52]
Total events	79		204			

Heterogeneity: Tau² = 0.06; Chi² = 7.07, df = 5 (P = 0.22); I² = 29%
Test for overall effect: Z = 5.43 (P < 0.00001)

Odds Ratio M-H, Random, 95% CI
0.01 0.1 1 10 100
Favours Glucometer (Artery) — Favours Glucometer (Capillary)