

Table 1. Clinical Studies Evaluating the Effect of Sodium Bicarbonate in Cardiac Arrest (from ¹⁰)

Author	Origin, year	Study design	Findings
Aufderheide et al [24]	Wisconsin, USA, 1992	Retrospective chart review, 619 arrest pts, 273 had ROSC	No association between SB and survival
Bar-Joseph et al [15]	Pittsburgh, PA, USA, 2002	Retrospective study, 2,915 pts from brain resuscitation clinical trial III dataset	SB given in 54% of cases, use increased with ACLS duration. SB should probably be given earlier.
Bar-Joseph et al [4]	Pittsburgh, PA, USA, 2005	Retrospective study, 2,122 pts from brain resuscitation clinical trial III dataset with ACLS lasting < 30 min	Earlier and more frequent use of SB associated with higher resuscitation rates and better long-term outcome
Bishop and Weisfeldt [25]	Baltimore, MD, 1976	Experimental data from seven dogs, clinical data from six cardiac arrest pts	SB increases PCO ₂ , accentuates intracellular acidosis in poorly ventilated pts, may be useful in well-ventilated pts
Delooz and Lewi [25]	Leuven, Belgium, 1989	Retrospective data analysis	SB > 1 mEq/kg associated with poor outcome
Dybvik et al [11]	Oslo, Norway, 1995	RCT, SB (245 pts) vs. 0.9% NS (257 pts)	SB therapy had no effect on outcome
Geraci et al [18]	Jacksonville, FL, USA, 2009	Retrospective chart review, all CPR cases in 2005 - 2006, 88 pts received SB	SB linked with alkalemia in 16% of pts, recommendation for early collection of ABG sample
Mattar et al [22]	Los Angeles, CA, USA, 1974	Case series, 12 pts, SB in cardiac arrest	Plasma osmolality > 400 mOsm/kg, serum Na concentrations > 200 mEq/L
Roberts et al [9]	Winnipeg, Manitoba, Canada, 1990	Retrospective study, 326 pts	Survival 4.2% (10/238) when SB given vs. 27.8% (20/72) when SB not given (P = 0.049) but SB use may reflect presence of severe acidosis
Stiell et al [10]	Ottawa, ON, Canada, 1995	Observational cohort study, 529 pts in 2 years received epi per ACLS guidelines	Logistic regression did not show association between SB and survival
Suljaga-Pechtel et al [27]	New York, NY, USA, 1984	Prospective observational study, 277 arrests in 226 pts	Survival lower in pts who needed SB, likely due to illness severity
van Walraven [12]	Ottawa, ON, Canada, 1998	Prospective cohort study, 773 pts with cardiac arrest, logistic regression for OR and 95% CI	269 of 773 pts survived the first hour. SB use significantly associated with unsuccessful resuscitation
Vukmir and Katz [16]	Pittsburgh, USA, 2006	RCT, 792 patients, SB (420 pts) vs. placebo (372 pts)	Overall survival 13.9% (110/792), no difference between groups. Trend for improved survival with SB in prolonged (> 15 min) arrest
Weaver et al [28]	Seattle, WA, USA, 1990	RCT, lidocaine (n = 106) vs. epi (n = 93); historical controls (n = 132) for SB	Higher survival with SB infusion, which was done before the study started
Weil et al [23]	Chicago, IL, USA, 1985	Cohort study, 105 cardiac arrest pts, all received SB	Survival lower if pH > 7.55 within 10 min of CPR
Weng et al [21]	Taiwan, 2013	Retrospective cohort, 92 pts (30 with vs. 62 without SB)	SB did not improve rate of ROSC in prolonged (> 15 min) cardiac arrest

ABG: arterial blood gas; ACLS: advanced cardiac life support; CI: confidence interval; CPR: cardiopulmonary resuscitation; min: minutes; epi: epi-
nephrine; pts: patients; OR: odds ratio; RCT: randomized controlled trial; ROSC: return of spontaneous circulation; SB: sodium bicarbonate.

Previous (limited) evidence shows equivalent or worse outcomes associated with sodium bicarbonate administration in cardiac arrest.