

RETRACTIONS

10.1136/heartjnl-2012-302337ret

DiNicolantonio JJ, Di Pasquale R, Taylor RS *et al.* Low sodium versus normal sodium diets in systolic heart failure: Systematic review and meta-analysis. *Heart* Published Online First: 21 August 2012 doi:10.1136/heartjnl-2012-302337.

This paper was published on-line in *Heart* on 21 August 2012. It reports a meta-analysis of six earlier papers. 1–6 It has come to our attention that two of these papers contain duplicate data in tables reporting baseline data and treatment effects. 3 4 The matter was considered by *BMJ* Publishing Ethics Committee. The Committee considered that without sight of the raw data on which the two papers containing the duplicate data were based, their reliability could not be substantiated. Following inquiries, it turns out that the raw data are no longer available having been lost as a result of computer failure. Under the circumstances, it was the Committee's recommendation that the *Heart* meta-analysis should be retracted on the ground that the reliability of the data on which it is based cannot be substantiated.

Heart 2013;99:820.

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Appendix 1

Not English language

1.) Sánchez Torres G, Posadas C, Tena I, Boyer JL, Enríquez C. Use of a normal sodium diet in the diuretic treatment of refractory cardiac insufficiency. Archivos del Instituto de Cardiología de México 1982 52:507-515

No morbidity/mortality outcomes

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Animal

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No active comparator

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Not randomized

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Not long enough follow up/not enough patients

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Appendix 2

Pubmed

("Sodium Chloride"[Mesh] OR "Salt-Tolerance"[Mesh] OR "Sodium Chloride, Dietary"[Mesh] OR "Sodium, Dietary"[Mesh] OR "Sodium"[Mesh] OR "Diet, Sodium-Restricted"[Mesh]) AND ("Heart Failure"[Mesh] OR "Ventricular Dysfunction"[Mesh])

Google Scholar

heart failure OR cardiomyopathy sodium OR salt OR NaCl

Embase

(cardiomyopathy OR heart failure OR systolic dysfunction OR left ventricular dysfunction) AND (NaCl OR sodium chloride OR sodium restriction OR salt intake)

Limited to (English language and (clinical trial or randomized controlled trial or controlled clinical trial or multicenter study or phase 1 clinical trial or phase 2 clinical trial or phase 3 clinical trial or phase 4 clinical trial))

Scopus

TITLE-ABS-KEY(((("heart failure" OR cardiomyopathy OR "systolic dysfunction" OR cardiomyopathies OR chf) AND (salt OR sodium OR nacl OR "Na Cl")))) AND SUBJAREA(mult OR agri OR bioc OR immu OR neur OR phar OR mult OR medi OR nurs OR vete OR dent OR heal) AND (EXCLUDE(DOCTYPE, "re") OR EXCLUDE(DOCTYPE, "ed") OR EXCLUDE(DOCTYPE, "bk")) AND (EXCLUDE(SUBJAREA, "VETE") OR EXCLUDE(SUBJAREA, "MATH") OR EXCLUDE(SUBJAREA, "CENG") OR EXCLUDE(SUBJAREA, "ENGI") OR EXCLUDE(SUBJAREA, "COMP") OR EXCLUDE(SUBJAREA, "BUSI") OR EXCLUDE(SUBJAREA, "MATE") OR EXCLUDE(SUBJAREA, "PHYS") OR EXCLUDE(SUBJAREA, "ENER") OR EXCLUDE(SUBJAREA, "DENT") OR EXCLUDE(SUBJAREA, "ARTS")) AND (EXCLUDE(EXACTKEYWORD, "Animals") OR EXCLUDE(EXACTKEYWORD, "Animal experiment") OR EXCLUDE(EXACTKEYWORD, "Animal model") OR EXCLUDE(EXACTKEYWORD, "Rat") OR EXCLUDE(EXACTKEYWORD, "Rats") OR EXCLUDE(EXACTKEYWORD, "Animal")) AND (EXCLUDE(EXACTKEYWORD, "Case report") OR EXCLUDE(EXACTKEYWORD, "Case Report")) AND (LIMIT-TO(LANGUAGE, "English"))

Cochrane

(salt OR sodium OR NaCl OR Na OR Na):and (heart failure OR cardiomyopathy OR left ventricular failure OR cardiomegaly OR ejection fraction OR EF OR LVEF OR systolic failure OR HF OR CHF

Combined EMBASE/MEDLINE

1. exp heart failure/
2. exp cardiomyopathy/
3. exp sodium chloride/
4. exp sodium restriction/

5. exp salt intake/
6. exp sodium intake/
7. exp sodium intake/
8. exp sodium/
9. exp dietary sodium/
10. exp dietary salt/
11. exp salt intake/
12. exp sodium intake/
13. exp sodium, dietary/
14. exp salt-tolerance/
15. exp sodium chloride, dietary/
16. exp heart ventricle function/
17. 1 or 2 or 16
18. 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15
19. 17 and 18
20. limit 19 to english language
21. remove duplicates from 20
22. limit 21 to "review"
23. 21 not 22
24. limit 23 to animal studies
25. limit 24 to animals
26. from 24 keep 1-564
27. from 25 keep 502-1004
28. 26 or 27
29. limit 28 to animal studies
30. limit 29 to animals
31. from 30 keep 1-501
32. 26 not 31
33. 26 or 27 or 32
34. limit 33 to human
35. limit 34 to humans
36. limit 35 to humans
37. 34 or 35 or 36
38. 33 not 37
39. 23 not 38
40. limit 39 to (embryo or infant or child or preschool child <1 to 6 years> or school child <7 to 12 years> or adolescent <13 to 17 years>)
41. limit 40 to (adult <18 to 64 years> or aged <65+ years>)
42. from 40 keep 1-89
43. from 41 keep 1-29
44. 42 not 43
45. 39 not 44
46. from 40 keep 90-730
47. limit 46 to ("all infant (birth to 23 months)" or "all child (0 to 18 years)" or "newborn infant (birth to 1 month)" or "infant (1 to 23 months)" or "preschool child (2 to 5 years)" or "child (6 to 12 years)" or "adolescent (13 to 18 years)")

48. limit 47 to ("all adult (19 plus years)" or "young adult (19 to 24 years)" or "adult (19 to 44 years)" or "young adult and adult (19-24 and 19-44)" or "middle age (45 to 64 years)" or "middle aged (45 plus years)" or "all aged (65 and over)" or "aged (80 and over)")
49. 47 not 48
50. from 45 keep 1970-2610
51. 50 not 49
52. from 45 keep 1-1969
53. 51 or 52
54. limit 53 to (clinical trial or randomized controlled trial or controlled clinical trial or multicenter study or phase 1 clinical trial or phase 2 clinical trial or phase 3 clinical trial or phase 4 clinical trial)
55. from 54 keep 1-376
56. from 53 keep 1970-2585
57. 55 or 56
58. limit 57 to editorial
59. 57 not 58

Web of Science

Topic=(("heart failure" OR cardiomyopathy OR cardiopathy OR cardiomyopathies OR cardiopathies OR "systolic dysfunction") AND (salt OR sodium OR NaCl))

Refined by: Languages=(ENGLISH OR UNSPECIFIED) AND Document Type=(ARTICLE

OR MEETING ABSTRACT OR LETTER OR DISCUSSION OR PROCEEDINGS PAPER OR NOTE OR CORRECTION OR REPRINT)

Databases=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH Timespan=All Years

Lemmatization=On

Supplemental Table 1

Characteristics of each trial

	Licata 2003	Paterna 2005	Paterna 2008	Parinello 2009	Paterna 2009	Paterna 2011
Patients (n)	54 vs. 53	46 vs. 48	114 vs. 118	86 vs. 87	179 vs. 191	890 vs. 881
Inclusion criteria	Refractory CHF (NYHA class IV), ejection fraction (EF) < 35%, creatinine < 2 mg/dl, blood urea nitrogen (BUN) \leq 60 mg/dl, reduced urinary volume and low natriuresis	Uncompensated (NYHA class IV), EF < 25%, creatinine < 2 mg/dl, BUN < 60 mg/dl, reduced urinary volume and low natriuresis (< 500 ml/24 h and < 60 mEq/24h, respectively)	Compensated (NYHA class II) hospitalized within previous 30 days for recently decompensated (Class IV) CHF, EF < 35%, creatinine < 2 mg/dl, baseline urinary output of 2,500 ml/day	Recently hospitalized but in a compensated state (NYHA class II), EF < 35%, creatinine < 2 mg/dl, BUN \leq 60 mg/dl, urinary volume (< 500 ml/24 hours) and low natriuresis (< 60 mEq/24	Compensated HF (NYHA class II-IV), EF < 35% and creatinine < 2 mg/dl	Hospitalized uncompensated (NYHA class III) subsequently discharged (NYHA class II), EF < 40%, creatinine < 2.5 mg/dl, BUN < 60 mg/dl and reduced urinary volume (< 800 ml/day)

				hours)		
Protocol	<p>Group 1: 2.8 g/day Na plus IV furosemide (500 mg- 1000 mg BID) plus HSS.</p> <p>Group 2: 1.8 g/day Na, same furosemide without HSS. All patients received ACE-Is (100%). Spironolactone (25 mg) was added to treatment in both groups in 1999. Both groups</p>	<p>Group 1: 2.8 g/day Na, IV furosemide (500-1,000 mg) BID plus HSS.</p> <p>Group 2: 1.8 g/day Na, same furosemide, without HSS. All patients were on ACE-Is and were allowed to receive spironolactone and carvedilol. Both groups received 1 L fluid restriction.</p>	<p>Group 1: 2.8 g/day Na, furosemide 250-500mg PO BID</p> <p>Group 2: 1.8 g/day Na, same furosemide. All patients received ACE-Is (100%), spironolactone 25 mg (87%) and carvedilol 6.25-25 mg BID (8%). Both groups received 1 L fluid restriction.</p>	<p>Group 1: 2.8 g/day Na plus oral furosemide (125 mg-250 mg BID, 2/3rds of patients received 125 mg BID).</p> <p>Group 2: 1.8 g/day Na plus same furosemide. All patients received ACE-Is (100%), spironolactone (25 mg) (75%) and carvedilol (55%). Both groups</p>	<p>8 groups placed on 1.8 g/day or 2.8 g/day of Na intake along with 1 or 2 L fluid restriction and 125-250 mg furosemide BID. All patients received ACE-Is (100%), spironolactone (93%) and carvedilol (37%).</p>	<p>1.8 g/day without HSS or 2.8 g/day of Na with HSS(stopped once compensated) . 50-125 mg furosemide BID (2/3rds of patients received 50 mg BID). Patients were also on ACE- Is (100%), spironolactone (85%) and carvedilol (70%). Both groups received 1 L fluid restriction.</p>

	received 1 L fluid restriction.			received 1 L fluid restriction.		
Starting and ending serum sodium	134.8 → 130.2 vs. 135.8 →142.3	134.9 → 130.1 at discharge vs. 133.8 → 142.3 at discharge	138.3 → 132.3 vs. 138.7 → 139.5	138.8 → 131.9 vs. 138.7 → 139.5	140 → 133 1L 140 → 132 2L vs. 140 → 140 1L 140 → 134.5 2L	138.8 → 131.5 vs. 137.8 → 137.8
Follow- up	31 months (2.6 years)	30 days	180 days	12 months	180 days	57 months (4.75 years)
Starting and ending blood pressure	134/77 → 114/72 vs. 137/75 → 115/68	146/82 → ND vs. 145/80 → ND	126/82 → 107/77 vs. 125/83 →111/75	126/82 → 107/77 vs. 125/83 → 111/75	250 mg then 125 mg furosemide groups: 1L then 2L 114/71 → 112/77, 112/72→ 107/80, 115/69→ 111/83,	134/77 → 115/68 vs. 137/75 → 112/65

					113/71 → 108/78 vs. 113/71 → 110/68, 115/69 → 111/83, 111/70 → 111/70, 116/71 → 112/88	
HF etiology (% or n)	CAD (62.9% vs. 61.9%) HHD (32.4% vs. 33.6%) DCM (4.6% vs. 4.4%) AF (14% vs. 13.4%)	CAD (48% vs. 50%) HHD (28% vs. 29%) DCM (24% vs. 21%) AF (17% vs. 15%)	CAD (53 vs. 57) HHD (37 vs. 39) DCM (24 vs. 22) AF (26 vs. 25)	CAD (43 vs. 41) HHD (28 vs. 29) DCM (16 vs. 16) AF (29 vs. 31)	250 mg then 125 mg furosemide groups: DM (26.9%, 25.4% vs. 30.7%, 28%) CAD (53.8%, 50.9% vs. 59.6%, 52%) HHD (42.3%, 47% vs. 38.4%,	CAD (31 vs. 31) HHD (14 vs. 12) DCM (9 vs. 10) AF (7 vs. 8)

					44%) DC (3.8%, 1.9% vs. 1.9%, 4%) AF (38.4%, 37.2% vs. 40.3%, 38%)	
EF (%)	34.4 vs. 33.7	30.2 → 31.1 (at 6 days) 30.1 → 32 (at 6 days)	29 → 30.2 vs. 29.5 → 32.2	29.3 → 30.2 vs. 29.5 → 32.5	ND	30.3 → 31.3 vs. 30.4 → 32
Starting and ending serum creatinine (mg/dl)	1.61 → 2.2 vs. 1.65 → 1.62	1.55 → 1.97 vs. 1.51 → 1.55	1.5 → 2.1 vs. 1.56 → 1.54	1.55 → 2.1 vs. 1.56 → 1.45	250 mg then 125 mg furosemide groups: 1.47 → 2.0, 1.49 → 2.3, 1.49 → 1.97 1.47 → 2.2 vs. 1.45 → 1.48 1.46 → 1.75 1.46 → 1.49 1.48 → 1.74	1.65 → 1.95 vs. 1.6 → 1.4
Starting	56 → 117	56.1 → 98	56.5 → 105	56.5 → 105	250 mg then	58.2 → 97

and ending BUN (mg/dl)	vs. 58.2 → 73.3	vs. 62 → 65	vs. 58.5 → 68.4	vs. 58.5 → 68.4	125 mg furosemide groups: 53 → 102, 53 → 115, 52 → 93 52 → 101 vs. 53 → 52 50 → 71 52 → 51 51 → 68	vs. 62 → 70
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AF = atrial fibrillation, DCM = dilated cardiomyopathy, DM = diabetes mellitus, EF = ejection fraction, LS = low sodium, L = liter of fluid

given, BID = twice daily, ND = no data, NS = normal sodium Na = sodium, NYHA = New York Heart Association, CHF = congestive heart

failure, HSS = hypertonic saline solution, HHD = hypertensive heart disease. Listed first are data obtained from patients receiving a low sodium diet with data from patients assigned to a normal sodium diet following.

Supplemental Table 2

Quality of Published Studies Reporting Use of a Low Sodium Versus a Normal Sodium Diet									
Author, Year (Reference)	Jadad Score	Allocation Concealment	Similarity of Baseline Characteristics	Eligibility Criteria	Blinding			Completeness of follow up	Intention- to-Treat Analysis
					Outcome Assessor	Care Provider	Patient		
Parrinello 2009 ¹	5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Licata 2003	3	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Paterna 2005	5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Paterna 2009	3	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Paterna 2011	3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Paterna 2008	3	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes