

Supplemental Material

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Supplemental Material 1: Full search strategy**PubMed**

1940-present

#	Search	Result
1	" Wounds and Injuries"[MeSH Terms] OR "Wound Infection"[MeSH Terms] OR "Wound Healing"[MeSH Terms] OR "Surgical Wound Infection"[MeSH Terms] OR "Surgical Wound Dehiscence"[MeSH Terms] OR "Surgical Wound" OR "wounds, stab"[MeSH Terms] OR "wounds, penetrating"[MeSH Terms] OR "wounds, gunshot"[MeSH Terms] OR "Multiple Trauma"[MeSH Terms] OR "wound*" OR "injur*" OR "trauma*"	2419742
2	"silver"[MeSH Terms] OR "silver*"	171084
3	"iodine"[MeSH Terms] OR "iodin*"	135649
4	#1 AND #2 AND #3	222

Cochrane Library

1993 to present

#	Search	Result
1	MeSH descriptor: [Wounds and Injuries] explode all trees	38676
2	MeSH descriptor: [Wound Infection] explode all trees	5177
3	MeSH descriptor: [Wound Healing] explode all trees	8208
4	MeSH descriptor: [Surgical Wound Infection] explode all trees	4576
5	MeSH descriptor: [Surgical Wound Dehiscence] explode all trees	559
6	MeSH descriptor: [Surgical Wound] explode all trees	566
7	MeSH descriptor: [Wounds, Stab] explode all trees	137
8	MeSH descriptor: [Wounds, Penetrating] explode all trees	426
9	MeSH descriptor: [Wounds, Gunshot] explode all trees	77
10	MeSH descriptor: [Multiple Trauma] explode all trees	319

11	(wound* OR injur* OR trauma*)	145422
12	#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11	157800
13	MeSH descriptor: [Silver] explode all trees	306
14	(silver*)	8768
15	#13 OR #14	8768
16	MeSH descriptor: [Iodine] explode all trees	1750
17	(iodin*)	6711
18	#16 OR #17	6711
19	#12 AND #15 AND #18	105

Embase

Elsevier / 1974- present

#	Search	Result
1	'injury'/exp OR 'injury' OR 'wound infection'/exp OR 'wound infection' OR 'wound healing'/exp OR 'wound healing' OR 'surgical infection'/exp OR 'surgical infection' OR 'wound dehiscence'/exp OR 'wound dehiscence' OR 'surgical wound'/exp OR 'surgical wound' OR 'stab wound'/exp OR 'stab wound' OR 'penetrating trauma'/exp OR 'penetrating trauma' OR 'gunshot injury'/exp OR 'gunshot injury' OR 'multiple trauma'/exp OR 'multiple trauma'	3441405
2	'silver'/exp OR 'silver'	183532
3	'iodine'/exp OR 'iodine'	172148
4	#1 AND #2 AND #3	895

Web of Science:

All Databases / 1637-present

#	Search	Result
1	TS=(wound* OR injur* OR trauma*)	3845202
2	TS=(silver*)	3689570

3	TS=(iodin*)	214321
4	(#3 AND #2 AND #1)	342

CINAHL

EBSCO-host / 1963-present

#	Search	Result
1	((MM "Wounds and Injuries+") OR (MM "Wound Healing+") OR (MM "Surgical Wound Infection") OR (MM "Surgical Wound Dehiscence") OR (MM "Surgical Wound") OR (MM "Wounds, Stab") OR (MM "Wounds, Penetrating+") OR (MM "Wounds, Gunshot") OR (MM "Multiple Trauma")) OR TX (wound* OR injur* OR trauma*))	818648
2	(MM "Silver") OR TX silver*	62750
3	(MM "Iodine") OR TX iodin*	15883
4	#1 AND #2 AND #3	886

Data Archiving and Networked Services

#	Search	Result
1	Any field: wound? OR injur? OR trauma?	746
2	Any field: silver?	23
3	Any field: iodine?	80
4	#1 AND #2 AND #3	0

ProQuest Dissertations & Theses Global

#	Search	Result
1	mainsubject(Wounds and Injuries) OR mainsubject(Wound Infection) OR mainsubject(Wound Healing) OR mainsubject(Surgical Wound Infection) OR mainsubject(Surgical Wound Dehiscence) OR mainsubject(Surgical Wound) OR mainsubject(wounds, stab) OR mainsubject(wounds, penetrating) OR mainsubject(wounds, gunshot) OR mainsubject(Multiple Trauma)	65675

2	wound? OR injur? OR trauma?	3617670
3	#1 AND #2	3617670
4	mainsubject(silver) OR silver*	1534747
5	mainsubject(iodine) OR iodin*	264206
6	#3 AND #4 AND #5	1005

Supplemental Material 2: Studies ineligible following full-text review

[1] Woodmansey EJ, Roberts CD. Appropriate use of dressings containing nanocrystalline silver to support antimicrobial stewardship in wounds. *Int Wound J*. 2018;15(6):1025-1032. doi: 10.1111/iwj.12969

Reason for exclusion: There is no comparison between silver and iodine dressings.

[2] Steffi W, Zaliana B, Amreen A, Nasirudin N. Management of malodour fungating wound with nanocrystalline silver coated dressing. *Med J Malaysia*. 2017 Oct;72(5):316-317

Reason for exclusion: There is no comparison between silver and iodine dressings.

[3] Kalemikerakis J, Vardaki Z, Fouka G, Vlachou E, Gkovina U, Kosma E, Dionyssopoulos A. Comparison of foam dressings with silver versus foam dressings without silver in the care of malodorous malignant fungating wounds. *J BUON*. 2012;17(3):560-4.

Reason for exclusion: Control group is not iodine dressing.

[4] Wang J, Smith J, Babidge W, Maddern G. Silver dressings versus other dressings for chronic wounds in a community care setting. *J Wound Care*. 2007;16(8):352-6. doi: 10.12968/jowc.2007.16.8.27857.

Reason for exclusion: Control group is not iodine dressing.

[5] Gupta S, Andersen C, Black J, de Leon J, Fife C, Lantis Ii JC, Niezgoda J, Snyder R, Sumpio B, Tettelbach W, Treadwell T, Weir D, Silverman RP. Management of Chronic Wounds: Diagnosis, Preparation, Treatment, and Follow-up. *Wounds*. 2017;29(9): S19-S36.

Reason for exclusion: There is no comparison between silver and iodine dressings.

[6] Verma J, Kanoujia J, Parashar P, Tripathi CB, Saraf SA. Wound healing applications of sericin/chitosan-capped silver nanoparticles incorporated hydrogel. *Drug Deliv Transl Res*. 2017 ;7(1):77-88. doi: 10.1007/s13346-016-0322-y.

Reason for exclusion: There is no comparison between silver and iodine dressings.

[7] Chang FY, Chang MC, Wang ST, Yu WK, Liu CL, Chen TH. Can povidone-iodine solution be used safely in a spinal surgery? *Eur Spine J*. 2006;15(6):1005-14. doi: 10.1007/s00586-005-0975-6.

Reason for exclusion: Control group is not silver dressing.

[8] Alexander S. Malignant fungating wounds: managing malodour and exudate. *J Wound Care*. 2009;18(9):374-82. doi: 10.12968/jowc.2009.18.9.44305.

Reason for exclusion: There is no comparison between silver and iodine dressings.

[9] Szweda P, Gorczyca G, Tylingo R. Comparison of antimicrobial activity of selected, commercially available wound dressing materials. *J Wound Care*. 2018;27(5):320-326. doi: 10.12968/jowc.2018.27.5.320.

Reason for exclusion: There is no comparison between silver and iodine dressings.

[10] Sinha R, Agarwal RK, Agarwal M. Povidone iodine plus neosporin in superficial burns--a continuing study. *Burns*. 1997 Nov-Dec;23(7-8):626-8. doi: 10.1016/s0305-4179(97)00069-7

Reason for exclusion: Control group is not silver dressing.

[11] Schwartz JA, Lantis JC 2nd, Gendics C, Fuller AM, Payne W, Ochs D. A prospective, non comparative, multicenter study to investigate the effect of cadexomer iodine on bioburden load and other wound characteristics in diabetic foot ulcers. *Int Wound J*. 2013;10(2):193-9. doi: 10.1111/j.1742-481X.2012.01109.x.

Reason for exclusion: Control group is not silver dressing.

[12] Ousey K, McIntosh C. Topical antimicrobial agents for the treatment of chronic wounds. *Br J Community Nurs*. 2009;14(9): S6, S8, S10 passim. doi: 10.12968/bjcn.2009.14.Sup4.43909.

Reason for exclusion: There is no comparison between silver and iodine dressings.

[13] Brown M, Dalziel SR, Herd E, Johnson K, Wong She R, Shepherd M. A Randomized Controlled Study of Silver-Based Burns Dressing in a Pediatric Emergency Department. *J Burn Care Res*. 2016;37(4):e340-7. doi: 10.1097/BCR.0000000000000273.

Reason for exclusion: Control group is not iodine dressing.

[14] Verbelen J, Hoeksema H, Heyneman A, Pirayesh A, Monstrey S. Aquacel(®) Ag dressing versus Acticoat™ dressing in partial thickness burns: a prospective, randomized, controlled study in 100 patients. Part 1: burn wound healing. *Burns*. 2014 May;40(3):416-27. doi: 10.1016/j.burns.2013.07.008

Reason for exclusion: Control group is not iodine dressing.

[15] Gee Kee EL, Kimble RM, Cuttle L, Khan A, Stockton KA. Randomized controlled trial of three burns dressings for partial thickness burns in children. *Burns*. 2015 Aug;41(5):946-55. doi: 10.1016/j.burns.2014.11.005

Reason for exclusion: Control group is not iodine dressing.

[16] He J, Qiao Y, Zhang H, Zhao J, Li W, Xie T, Zhong D, Wei Q, Hua S, Yu Y, Yao K, Santos HA, Zhou M. Gold-silver nanoshells promote wound healing from drug-resistant bacteria infection and enable monitoring via surface-enhanced Raman scattering imaging. *Biomaterials*. 2020; 234:119763. doi: 10.1016/j.biomaterials.

Reason for exclusion: Control group is not iodine dressing.

[17] Gwak HC, Han SH, Lee J, Park S, Sung KS, Kim HJ, Chun D, Lee K, Ahn JH, Kwak K, Chung HJ. Efficacy of a povidone-iodine foam dressing (Betafoam) on diabetic foot ulcer. *Int Wound J*. 2020;17(1):91-99. doi: 10.1111/iwj.13236.

Reason for exclusion: Control group is not silver dressing.

[18] Ammons MC. Anti-biofilm strategies and the need for innovations in wound care. *Recent Pat Antiinfect Drug Discov*. 2010;5(1):10-7. doi: 10.2174/157489110790112581

Reason for exclusion: There is no comparison between silver and iodine dressings.

[19] Thammawithan S, Siritongsuk P, Nasompag S, Daduang S, Klaynongsruang S, Prapasarakul N, Patramanon R. A Biological Study of Anisotropic Silver Nanoparticles and Their Antimicrobial Application for Topical Use. *Vet Sci*. 2021 Aug 31;8(9):177.

Reason for exclusion: The study was excluded from our meta-analysis due to its focus on non-human subjects, specifically cultured bacterial colonies, which diverges from our goal of examining human-related research.

[20] Davis SC, Gil J, Solis M, Higa A, Mills A, Simms C, Pena PV, Li J, Raut V. Antimicrobial effectiveness of wound matrices containing native extracellular matrix with polyhexamethylene biguanide. *Int Wound J*. 2022 Jan;19(1):86-99.

Reason for exclusion: The study was excluded for not providing key outcomes: healing time, rate, exudation reduction, pain, and anti-infective efficacy.

[21] Prezzavento GE, Mas CR, Achaval Rodríguez J, Juárez Calvi RN, Piskulic L, Angelini J, Allasia MB, Smania AM, Moyano AJ. Comparison of Efficacy of Povidone-Iodine, Ethanol, and an Aerosol Formulation of Silver Sulfadiazine in Controlling Microbial Burden on Sutures From Clean Surgeries. *J Burn Care Res*. 2021 Sep 30;42(5):975-980.

Reason for exclusion: The study was excluded for not providing key outcomes: healing time, rate, exudation reduction, pain, and anti-infective efficacy.

[22] Cox SG, Cullingworth L, Rode H. Treatment of paediatric burns with a nanocrystalline silver dressing compared with standard wound care in a burns unit: a cost analysis. *S Afr Med J*. 2011 Sep 27;101(10):728-31.

Reason for exclusion: The study was excluded for not providing key outcomes: healing time, rate, exudation reduction, pain, and anti-infective efficacy.

[23] Lantis JC 2nd, Gendics C. In vivo effect of sustained-release silver sulphadiazine foam on bioburden and wound closure in infected venous leg ulcers. *J Wound Care*. 2011 Feb;20(2):90-6.

Reason for exclusion: The study was not a randomized controlled trial and lacked a control group.

[24] Kaiser W, von der Lieth H, Potel J, Heymann H. Tierexperimentelle Untersuchungen zur lokalen Anwendung von Silbersulfadiazin, Cefsulodin und PVP-Jod bei Brandwunden [Experimental study of the local application of silver sulfadiazine, cefsulodin and povidone-iodine in burns]. *Infection*. 1984 Jan-Feb;12(1):31-5.

Reason for exclusion: The study was based on animal testing.

[25] Robson MC, Schaerf RH, Krizek TJ. Evaluation of topical povidone-iodine ointment in experimental burn wound sepsis. *Plast Reconstr Surg*. 1974 Sep;54(3):328-34.

Reason for exclusion: The study was based on animal testing.

[26] Michaels JA, Campbell WB, King BM, Macintyre J, Palfreyman SJ, Shackley P, Stevenson MD. A prospective randomised controlled trial and economic modelling of antimicrobial silver dressings versus non-adherent control dressings for venous leg

ulcers: the VULCAN trial. *Health Technol Assess*. 2009 Nov;13(56):1-114, iii.

Reason for exclusion: Control group is not iodine dressing.

[27] Fumal I, Braham C, Paquet P, Piérard-Franchimont C, Piérard GE. The beneficial toxicity paradox of antimicrobials in leg ulcer healing impaired by a polymicrobial flora: a proof-of-concept study. *Dermatology*. 2002;204 Suppl 1:70-4.

Reason for exclusion: The study does not include comparative analysis of silver and iodine dressings.

[28] Wiese KR, van Heukelum M, Lombard CJ, Ferreira N, Burger MC. Randomized Controlled Trial Comparing Silver-Impregnated Fibrous Hydrocolloid Dressings With Silver Sulfadiazine Cream Dressings for the Treatment of Fracture Blisters to Determine Time to Surgical Readiness. *J Orthop Trauma*. 2021 Aug 1;35(8):442-447.

Reason for exclusion: The study does not include comparative analysis of silver and iodine dressings.

[29] Mehl AA, Damião AO, Viana SD, Andretta CP. Hard-to-heal wounds: a randomised trial of an oral proline-containing supplement to aid repair. *J Wound Care*. 2021 Jan 2;30(1):26-31.

Reason for exclusion: The study does not include comparative analysis of silver and iodine dressings.

Supplemental Table 1. Characteristics of the included studies

Reference	Wounds Type	Country	Sample size	Type of dressing	Area of wound	Frequency of dressing change	Category of measured Outcomes
Kucan, 1981	chronic pressure ulcers	USA	N0=15 N1=11	N0: Silver sulfadiazine cream N1: Povidone-iodine solution	N/A	N0: Every eight hours N1: Every six hours	(1) Anti-infective efficacy
Sinha, 1997	superficial burn injury	India	N0=1089 N1=1053	N0: Silver sulphadiazine N1: Povidone iodine plus neosporin	N/A	N0: Twice daily N1: Replace no more than every 12 hours, for up to three times a day.	(1) Healing time; (2) Healing rate; (3) Anti-infective efficacy
Webber, 1977	second-degree burns over less than 15% of the body surface area (less than 5% in children)	USA	N0=29 N1=22	N0: Silver sulfadiazine N1: Povidone-iodine	N/A	N/A	(1) Healing rate; (2) Pain; (3) Exudate amountd
Hauser, 2007	Fresh IIa burns, 36-300cm ² , no infection, ≤3 days.	Germany	N0=43 N1=43	N0: Silver-sulfadiazine cream N1: Liposome Polyvinyl-Pyrrolidone Iodine hydrogel	N0: 79.3cm ² ; N1: average area is 77.3cm ²	Once a day	(1) Healing time; (2) Pain; (3) Anti-infective efficacy

Homann, 2007	burn wounds (degree IIa) not older than 3 days	Germany	N0=43 N1=43	N0: Silver-sulfadiazine cream N1: Liposome Polyvinyl-Pyrrolidone Iodine hydrogel	N0:79.2cm ² ; N1:50 cm ²	Once a day	(1) healing time (2) anti-infective efficacy
Jurczak, 2007	Surgical and traumatic wounds	Germany France Great Britain	N0=35 N1=32	N0: Hydro fiber Ag dressing; N1: povidone-iodine gauze	N0:4050mm ² N1:15200mm ²	N0: Once every 7 days N1: N/A	(1) healing time (2) healing rate (3) Exudate amount (4) pain (5) anti-infective efficacy
Miller, 2010	Leg ulcer	Australia	N0=140 N1=141	N0: Nanocrystalline silver; N1: Cadexomer iodine	N0: 596.96 mm ² N1:812.37 mm ²	N/A	(1) healing rate (2) anti-infective efficacy
Alimov, 2013	Cutaneous abscesses	USA	N0=43 N1=49	N0: Silver-containing hydro fiber dressing; N1: Iodoform Packing strips	N/A	N/A	(1) healing rate (2) pain
Singh, 2014	Infected wounds	India	N0=35 N1=35	N0: Silver foam Dressing;	N/A	once a day	(1) healing time (2) healing rate (3) Exudate amount

				N1: Polyvinyl-Pyrrolidone Iodine dressing			(4) anti-infective efficacy
Ramanaiah, 2015	Diabetic foot	India	N0=50 N1=50	N0: Nanocrystalline silver dressing; N1: Betadine gauze	N/A	N/A	(1) healing rate
Rahaman, 2017	Diabetic foot	India	N0=30 N1=30	N0: Nanocrystalline silver; N1: Povidone iodine dressing	N/A	N/A	(1) healing rate (2) anti-infective efficacy
Subramanyam, 2019	Needle stick injuries	India	N0=27 N1=27	N0: Silver sulfadiazine N1: Povidone iodine	N/A	N/A	(1) anti-infective efficacy
Jeong, 2019	Acute partial thickness burns	Korea	N0=16 N1=16	N0: Silver foam dressing; N1: Polyurethane foam dressing containing 3% povidone-iodine	5% of the body surface area	Once every other day	(2) healing time (3) pain
Chen, 2020	Pemphigus vulgaris	China	N0=28 N1=30	N0: Physiotulle Ag; N1: diluted povidone iodine solution (0.5%)		N0: Once every 3-4 days; N1: once a day	(1) healing time (2) anti-infective efficacy (3) pain

Yahia, 2021	diabetic foot ulcers	Bahrain	N0=30 N1=30	N0: hydrogel/nano silver wound dressing N1: Povidone iodine	N0:2582.8sq mm; N1:5746.2sq mm	N0: once a day; N1: Once every two days	(1) healing time; (2) healing rate
Essa, 2021	nonischemic diabetic foot ulcers	Egypt	N0=40 N1=40	N0: SilvrSTAT Gel dressing; N1: Povidone iodine	N/A	N0: once a day; N1: Once every three days	(1) healing rate
Akin, 2022	Closed abdominal incision after colostomy	Turkey	N0=16 N1=16	N0: Silver-contraining hydrofiber dressing; N1: Povidone iodine	N/A	N0: once a day; N1: Once every 5 days	(1) anti-infective efficacy

Note: N0 means the silver dressing group, N1 means the iodine dressing group.

Supplemental Table 2. Inclusion of the primary outcome measured by the studies (intervention group vs comparison group)

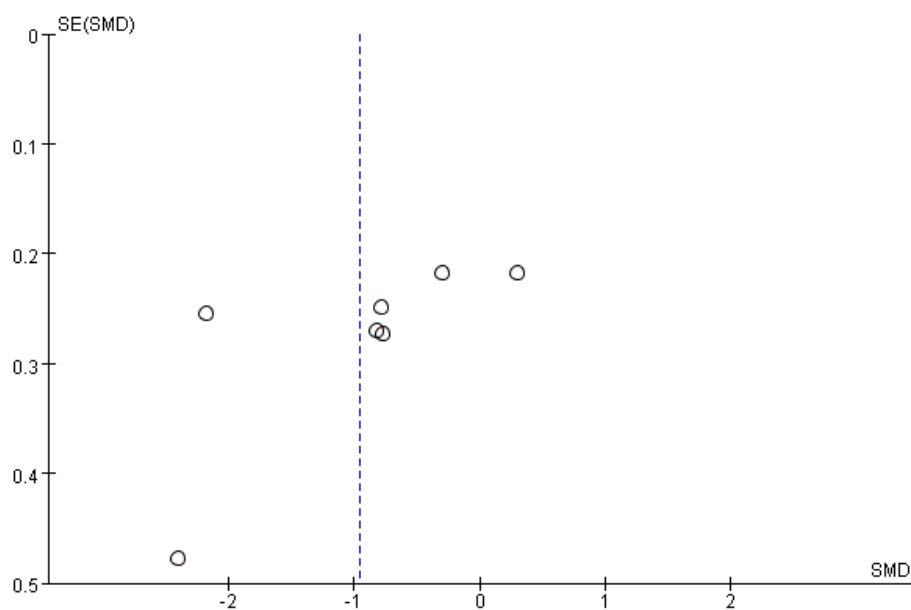
Study	Healing time	Healing rate	Exudate amount	Pain	Anti-infective efficacy
Kucan, 1981	N/A	N/A	N/A	N/A	↑Significant difference in mean bacterial levels (100% VS 63.6%, $P < 0.01$)
Sinha, 1997	↓Patients with burns <50% healed significantly faster within 15 days ($P < 0.001$), and those with >50% burns showed superior healing up to 45 days post-admission with PVP+N treatment ($P < 0.001$).	↓46.72% VS 54.40%	N/A	N/A	↓Fewer infections on days 7 and 18 in the povidone iodine plus Neosporin group ($P < 0.01$ and $P < 0.01$, respectively).
Webber, 1997	N/A	13.6% VS 27.6%, No difference	↓The difference in wound dryness between Povidone-iodine and Silver sulfadiazine was significant overall but not when excluding patients with complicating factors.	No difference	N/A

Hauser, 2007	↓9.9±4.5 VS 11.3±4.9 days, $P = 0.015$	N/A	N/A	Pain occurred with the same frequency and severity in both groups.	No wound infection occurred in the two groups.
Homann, 2007	↓9.9±4.5 vs 11.3±4.9 days, $P = 0.015$	N/A	N/A	No difference	No difference
Jurczak, 2007	No difference	No difference	↑Management “Excellent” or “good” (94% vs 52%, $P < 0.001$)	↑Pain score: excellent (70.6% vs 22.6%, $P < 0.001$)	No difference
Miller, 2010	N/A	↑Faster healing in first 2 weeks: $F = 9.16$, $P < 0.01$; ↑no healing in 12 weeks: $F = 4.19$, $P < 0.05$.	N/A	N/A	↑Wound healing was faster in the first 2 weeks with nil or low bacterial levels, but no difference was seen with moderate-to-heavy growth.
Alimov, 2013	N/A	↑Significant 30%+ reduction in abscess area 48-72h (82.6% vs 26.1%, $P < 0.001$) no difference in cellulitis reduction 10-14 days.	N/A	↑Reduction in pain intensity from initial to 48-72h later ($F_{1,63} = 4.25$, $P = 0.043$)	N/A

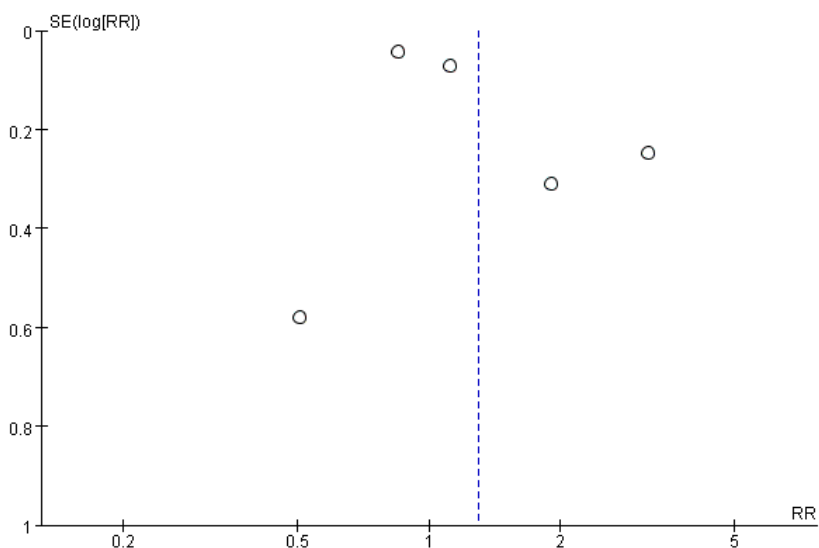
Singh, 2014	↑51-100cm ² 48.22 VS 57.2 days , <i>P</i> = 0.0058	↑1-50cm ² wound size reduction at day 28 (76.45% vs 57.29%, <i>P</i> < 0.001) ↑51-100cm ² reduction at day 28 (53.06% vs 28.63%, <i>P</i> < 0.001)	↑Exudate reduction time: 1.6 days vs 18.91 days (<i>P</i> < 0.0001)	N/A	↑Mean number of days taken to achieving no growth in pus culture (9.60 vs 14.63 days, <i>P</i> < 0.001).
Ramanaiah, 2015	↑20.54±7.04 vs 36.19±7.24 days <i>P</i> < 0.01	↑Percentage reduction of ulcer (94.81% vs 84.69%, <i>P</i> < 0.001)	N/A	N/A	N/A
Rahaman, 2017	↑30.80±9.00 vs 37.43±6.93 days, <i>P</i> = 0.002	No difference	N/A	N/A	No difference
Subramanya m,2019	N/A	N/A	N/A	N/A	<i>P</i> = 0.35
Jeong, 2019	12.53±1.13 vs 9.88±1.02 days, <i>P</i> = 0.1556	N/A	N/A	No difference	N/A
Chen, 2020	↑43.72±11.85 vs 55.00±16.64 days, <i>P</i> = 0.008	N/A	N/A	↑NRS scores: 2.71±0.65vs3.62±0.99 , <i>P</i> < 0.0001	No difference
Yahia, 2021	N/A	↑The hydrogel / nanosilver-based dressing group had a	N/A	N/A	N/A

		higher healing rate of ulcer			
Essa, 2021	N/A	↑Ulcer healing rate weekly: 0.68 ± 0.07 vs 0.47 ± 0.04 ($P < 0.001$)	N/A	N/A	N/A
Akin, 2022	N/A	N/A	N/A	N/A	↑Incidence of infection: 26.7% vs 0, $P = 0.043$

Note: ↑ indicate silver dressing had significant result, ↓ indicate idiom dressing had significant result



Supplemental Figure 1. Funnel plots of seven studies comparing wound healing time with silver and iodine dressings



Supplemental Figure 2. Funnel plots of five studies comparing wound healing rate with silver and iodine dressings