

Specific Question:

In patients requiring wound cleansing or wound irrigation in general practice settings is sterile saline superior to tap water in reducing or preventing wound infection and promoting healing?

Clinical bottom line

Results showed that there was no increase in infection rates or reduction in wound healing in patients who had wounds cleaned with tap water. In three trials in adult patients, the infection rate was reduced with tap water. The authors concluded that tap water was no less effective than sterile saline but with certain conditions, namely that practitioners should take into account:

- **the quality of water (tap water within the UK is of sufficient quality)**
- **the nature of wounds (use saline solution when bone/ tendon can be observed within the wound)**
- **the patient's general condition, including the presence of comorbidities that compromise immune function (use saline solution in immunocompromised patients)**

Why is this important?

The most important step in the cleansing and irrigation of wounds is to remove loose tissue, particulate matter and bacteria from the wound (Weiss et al, 2013). Most nurses routinely use sterile saline for wound care even though there is a paucity of scientific evidence to support its use as an irrigation solution. Furthermore, tap water may be a more ideal irrigation solution as it is easily accessible and less expensive than sterile saline.

Search timeframe (e.g. 2006-2016)

Inception of searched databases to March 2016

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Inclusion Criteria

	Description	Search terms (In the final document this should be a combination of your clinical and librarian search terms)
Population and Setting	Adults in primary care requiring wound irrigation/cleansing/care.	P: Wound cleansing or wound irrigation or wound care or surgical wound or chronic wound or laceration or traumatic wound or ulcers
Intervention or Exposure	Tap water.	I: Tap water or non-sterile water
Comparison, if any	Saline solution.	C: Sterile water, normal saline, saline solution, steri-pod, saline
Outcomes of interest	Primary: Prevention/ reduction of infection. Secondary: Wound healing.	O: Wound healing or wound infection or infection or reduction of infection
Types of studies	RCTs and systematic reviews	

Routine Databases Searched

TRIP Database, The, Cochrane Library, Medline, Cinahl,

Date of search- Searches undertaken as part of 'CAT in a DAY training in September 2015

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Results of the search

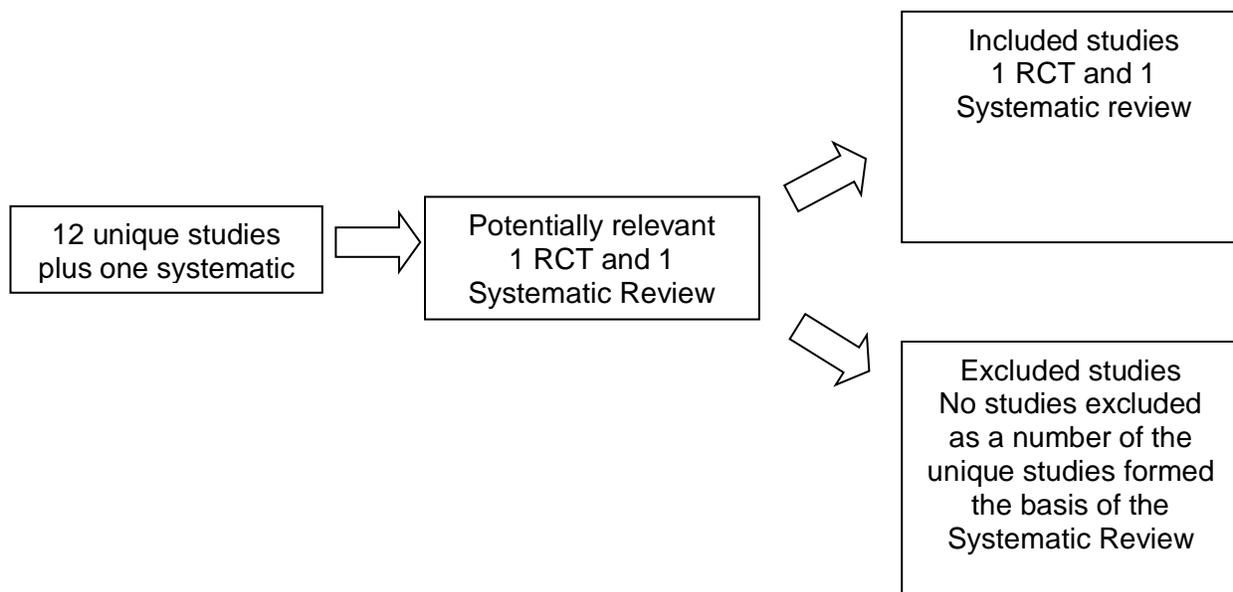


Table 1- Detail of included studies

First Author, year and type of study	Population and setting	Intervention or exposure tested	Study results	Assessment of quality and comments
Fernandez R, Griffith R (2012) Systematic Review	Studies of lacerations, open fractures, chronic wounds and surgical wounds Secondary care	Randomised and quasi randomised controlled trials that compared the use of water with other solutions for wound	There is no evidence that tap water increases infection rates when compared to sterile saline The use of tap water is recommended under certain conditions, namely that practitioners should take into account:	A good quality Cochrane Systematic Review. Studies were generally heterogeneous.

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<p>Weis EA, Oldham G, Lin M, Foster T, Quinn JV (2013)</p> <p>RCT</p>	<p>Patients older than 1 year of age, who presented to the emergency department with a soft tissue laceration requiring repair, were entered into the study under informed consent. Exclusion criteria included any underlying immunocompromising illness, current use of antibiotics, puncture or bite wounds, underlying tendon or bone involvement, or</p>	<p>cleansing were eligible for inclusion. Additional criteria were outcomes that included objective or subjective measures of wound infection or healing.</p> <p>Patients had their wounds irrigated either with TW or SS prior to closure, controlling for the volume and irrigation method used. The patient, the treating physician and the physician</p>	<ul style="list-style-type: none"> • the quality of water (tap water within the UK is of sufficient quality) • the nature of wounds (use saline solution when bone/ tendon can be observed within the wound) • the patient's general condition, including the presence of comorbidities that compromise immune function (use saline solution in immunocompromised patients) <p>Tap water is cost-effective</p> <p>There were no differences in the demographic and clinical characteristics of the two groups. There were 20 infections 6.4% (95% CI 9.1% to 3.7%) in the SS group compared with 11 infections 3.5% (95% CI 5.5% to 1.5%) in the TW group, a difference of 2.9% (95% CI -0.4% to 5.7%).</p>	<p>A generally good quality RCT</p>
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	wounds more than 9 hours old. Secondary care	checking the wound for infection were all blind regarding solution type.		
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Summary

One Cochrane Systematic Review (Fernandez and Griffith, 2012) and one RCT (Weiss et al, 2013) were reviewed for their potential to answer the question. Several abstracts from earlier trials were identified to be part of the Systematic Review.

The systematic review consisted of eleven trials of differing quality. The heterogeneity of the studies prevented the review from producing a meta-analysis but several outcomes were pooled across studies. Thus, the evidence suggests that tap water is neither superior nor inferior to saline solution for wound cleansing/ irrigation.

There is no evidence that using tap water to cleanse acute wounds in adults or children increases or reduces infection. There is not strong evidence that cleansing wounds per se increases healing or reduces infection (Fernandez and Griffith, 2012).

Implications for Practice/research

A local audit was conducted. The audit was carried out in four general practices, involving 66 patients (using tap water) and 79 (saline solution). No differences in infection rates were reported according to solution used, and no difference in patient satisfaction rates between techniques used.

These results and recommendations for practice will be disseminated throughout Stoke-on-Trent and North Staffordshire CCGs

What would you tweet? (140 characters)

Evidence suggests that tap water can be as safe a sterile saline for wound irrigation and wound cleansing in primary care settings.

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References

1. Fernandez R, Griffith R (2012) Water for wound cleansing (Review) *The Cochrane Collaboration*.
<http://ro.uow.edu.au/cgi/viewcontent.cgi?article=4100&context=hbspapers>
<http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD003861.pub3/epdf>
2. Weis EA, Oldham G, Lin M, Foster T, Quinn JV (2013) Water is a safe and effective alternative to sterile normal saline for wound irrigation prior to suturing: a prospective double-blind, randomised, controlled clinical trial. *BMJ Open* doi: 10.1136
<http://bmjopen.bmj.com/content/3/1/e001504.full.pdf+html>

Oct 2019 update

The findings of the original CAT remain current with any new publications citing the original studies. Two more recent links appraising the same evidence can be found below.

https://www.cochranelibrary.com/cca/doi/10.1002/cca.741/full#.XL8t_PXvFQY.email=0A=0A---

<file:///ufs.nur.keele.ac.uk/homes/Downloads/Nguyen%20JBI.pdf>

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