

Letters to the Editor

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This series is coordinated by Kenny Lin, MD, MPH, Associate Deputy Editor for *AFP* Online.

Choosing Tap Water vs. Sterile Saline for Wound Irrigation

Original Article: Tap Water vs. Sterile Saline for Wound Irrigation [Medicine by the Numbers]

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TO THE EDITOR: I have several comments on the *Medicine by the Numbers* department on wound irrigation.¹ In the cited study on chronic wounds, the relative risk of infection in wounds treated with tap water compared to sterile saline irrigation (0.16) was not stated, but with a 95% confidence interval of 0.01 to 2.96, it was not statistically significant and did not warrant a number needed to treat (NNT) calculation.² This study also showed that there were twice as many wounds healed in the normal saline group than in the tap water group (16 vs. 8, respectively). Although this was not statistically significant either, the two groups were dissimilar in several important ways. The wounds in the normal saline group were older (216 days vs. 82 days), smaller (323 mm² vs. 503 mm²), and shallower (0.123 cm vs. 0.188 cm) than those in the tap water group; any of these factors could have affected the infection or healing rates.

At the present time, the best that can be said is that the risks and benefits of tap water irrigation are similar to those of normal saline irrigation and either may be the same as not irrigating at all.

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1. Chao C, Runde D. Tap water vs. sterile saline for wound irrigation. *Am Fam Physician*. 2015;92(3):online.
2. Griffiths RD, Fernandez RS, Ussia CA. Is tap water a safe alternative to normal saline for wound irrigation in the community setting? *J Wound Care*. 2001;10(10):407-411.

IN REPLY: I'd like to thank Dr. Pisarik for his response to our article. His letter discusses a study of 43 patients mentioned in the caveats section of our publication. As mentioned, the study addressed chronic wounds and found a statistically nonsignificant decrease in chronic wounds in the tap water group vs. the normal saline group. Dr. Pisarik is correct that an NNT calculation is not warranted for nonsignificant findings. The differences in wound demographics between the two groups was another limitation of this small study.

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TO THE EDITOR: The review by Drs. Chao and Runde¹ provided interesting and clinically useful information about a topic that is highly relevant to family physicians. However, we have a concern regarding the authors' potentially misleading interpretation of the study results drawn from a Cochrane review.²

The authors calculated a number needed to treat (NNT) of 36 to prevent one acute wound infection among the tap water group compared with the sterile saline group without including the confidence interval (CI). They concluded that using tap water for acute wound irrigation has benefits greater than harms based on nonsignificant differences from a Cochrane review (relative risk = 0.66; 95% CI, 0.42 to 1.04)². Typically, NNT is not applied to a finding that lacks statistical significance: the CI for the relative risk crosses 1.0. Such an application of the NNT only as a point estimate, especially when there is no significant difference, could easily be misleading. The importance of reporting the CIs with the NNT value has been highlighted previously.³ Including CIs helps us more easily determine and recognize the accuracy of estimated differences.

We agree with the authors' conclusion that tap water is a reasonable alternative to sterile saline for cleansing acute wounds. Potential

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benefits include cost of supplies, physician workload, and the risk of body fluid contamination with splatter.⁴ Nevertheless, given the current evidence, it is an overstatement to conclude that it is superior to sterile saline for preventing wound infections.

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1. Chao C, Runde D. Tap water vs. sterile saline for wound irrigation. *Am Fam Physician*. 2015;92(3):online.
2. Fernandez R, Griffiths R. Water for wound cleansing. *Cochrane Database Syst Rev*. 2012;(2):CD003861.
3. Altman DG. Confidence intervals for the number needed to treat. *BMJ*. 1998;317(7168):1309-1312.
4. Moscatti RM, Mayrose J, Reardon RF, Janicke DM, Jehle DV. A multi-center comparison of tap water versus sterile saline for wound irrigation. *Acad Emerg Med*. 2007;14(5):404-409.

IN REPLY: Drs. Ie and Wilson correctly note that the CI for a decrease in wound infection rates in the tap water group crossed 1.0 (relative risk = 0.66; 95% CI, 0.42 to 1.04) and, as such, the result is not statistically significant. In this case, we agree that an NNT calculation is not appropriate. This error was rooted in the fact that we used an outdated version of the Cochrane review during preparation of our article. In the originally published version of the Cochrane, the authors reported a treatment effect for tap water that was statistically significant (relative risk = 0.6; 95% CI, 0.40 to 0.99). An astute reader subsequently identified a transcription error in their analysis, which, when corrected, resulted in the treatment effect for tap water becoming nonsignificant. When the correct calculation was incorporated in the final prepublication review of this *Medicine By The Numbers*, I did not note the significance of the change and left the NNT calculation in place.

In a similar vein, Dr. Pisarik notes that we also calculated an NNT for tap water use in chronic wound irrigation for a result that was not statistically significant (NNT = 9; 95% CI, 0.01 to 2.96). In this case, we noted the lack of significance but wanted to include the calculation by way of comparison to our primary finding.

We are grateful to these physicians for highlighting the error and have corrected the online version of the

review so it does not include either of these NNT calculations. Although these corrections are important, they do not have any substantive impact on the overall conclusion of the review: "Given the lack of adverse events and the affordability of tap water, tap water should be considered as preferable to normal saline for cleansing of acute wounds."

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Corrections

Incorrect text. The article "Diagnosis and Treatment of Peripheral Arterial Disease" (September 1, 2013, p. 306) required a clarification because of a retraction from one of the cited sources. On October 13, 2015, *JAMA* published a Notice of Retraction regarding reference #25 (Ahimastos AA, et al. *JAMA*. 2013) because of "an admission of fabricated results by Anna A. Ahimastos, PhD, who is both the first and corresponding author and was responsible for data collection and integrity for the article." To avoid misleading readers about the effectiveness of ramipril in treating functional limitations in patients with peripheral arterial disease, the last paragraph of the Medications section (p. 309) was rewritten as follows: "The angiotensin-converting enzyme inhibitor ramipril (Altace) has been evaluated for treating functional limitations in patients with PAD. A randomized controlled trial comparing 10 mg of ramipril with placebo in patients with intermittent claudication reported a 77% increase in pain-free walking time and a 123% increase in maximum walking time in the treatment group at six months.²⁵ However, the trial's publication was subsequently retracted when one of the authors admitted to fabricating data collection at one of the study sites (see Editor's Note)." The online version of the article has been clarified.

Incorrect test. The article "Preventive Health Care for Men Who Have Sex with Men" (June 15, 2015, p. 844) contained an error in the type of nucleic acid amplification testing (NAAT) listed in *Figure 1* (p. 850). In the last row of this algorithm, the text should have read "Use urine NAAT to screen for gonorrhea and chlamydia" for those patients who had a high-risk sexual encounter involving insertive anal intercourse. The online version of the article has been corrected. ■