Topic Brief: Benefits of Copper Drinking Vessels

Date: 5/5/2020
Nomination Number: 904

Purpose: This document summarizes the information addressing a nomination submitted on 5/4/2020 through the Effective Health Care Website. This information was used to inform the Evidence-based Practice Center (EPC) Program decisions about whether to produce an evidence report on the topic, and if so, what type of evidence report would be most suitable.

Issue: The nominator is interested in the use of a copper vessel for drinking water to improve health outcomes.

Program Decision: While an interesting topic there were no primary studies on this topic. The EPC Program will not develop a new evidence review.

Background

- Storing water in copper and silver pots finds mention in ancient texts of Ayurveda for purification of water. It is hypothesized that storing water in copper vessels could be a way to purify it. [1]
- Copper has antimicrobial qualities and has been studied for use in healthcare settings.[2, 3]
- There are detrimental effects of too much copper intake for people. This includes nausea, vomiting, and diarrhea. Symptoms of long-term exposure include: anemia, seizures, involuntary movements, jaundice, kidney failure and liver failure.[4]
- Copper is both an essential nutrient and a drinking-water contaminant. It is found in pipes, valves and fittings and is present in alloys and coatings. Copper can be added to water to control algae. Copper concentrations in drinking water can vary. The most common source of copper is related to the corrosion of copper plumbing.[5]

Scope

1. What are the benefits and harms of drinking water from a copper vessel?

Table 1. Questions and PICOTS (population, intervention, comparator, outcome, and setting)

Questions	1. Copper vessels for drinking water
Population	Adults 18 years and older
Interventions	Copper vessels for drinking water
Comparators	Other vessels for drinking water
Outcomes	Health outcomes Adverse effects: nausea, vomiting, diarrhea
Settings	Outpatient

Assessment Methods
See Appendix A.

Summary of Selection Criteria Assessment
While an interesting topic, we found no systematic reviews or primary research studies about the health benefits of drinking water from copper vessels. In addition it is unclear if the nominator had an interest or planned use of a new evidence review.

References

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2. Inkinen J, Makinen R, Keinanen-Toivola MM, et al. Copper as an antibacterial material in different facilities. Lett Appl Microbiol. 2017 Jan;64(1):19-26. doi: 10.1111/lam.12680. PMID: 27718259. https://www.ncbi.nlm.nih.gov/pubmed/27718259
3. Antimicrobial Copper Surfaces for Reducing Healthcare-associated Infection Risk ECRI. Plymouth Meeting, PA: 2020. https://assets.ecri.org/PDF/COVID-19-Resource-Center/COVID-19-Clinical-Care/COVID-ECRI_HTA_Antimicrobial-Copper-Surfaces.pdf
4. Heller JL. Copper poisoning. Bethesda, MD: Medline Plus, National Library of Medicine. https://medlineplus.gov/ency/article/002496.htm. Accessed on 5 May 2020.
5. Guidelines for Drinking Water Quality: Chemical Fact Sheets World Health Organization. Geneva, Switzerland: 2003. https://www.who.int/water_sanitation_health/water-quality/guidelines/chemicals/copper/en/

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Conflict of Interest: None of the investigators have any affiliations or financial involvement that conflicts with the material presented in this report.

Appendix A: Methods

We assessed nomination for priority for a systematic review or other AHRQ Effective Health Care report with a hierarchical process using established selection criteria. Assessment of each criteria determined the need to evaluate the next one. See Appendix B for detailed description of the criteria.

Appropriateness and Importance

We assessed the nomination for appropriateness and importance.

Desirability of New Review/Absence of Duplication

We searched for high-quality, completed or in-process evidence reviews published in the last three years April 2017 to May 2020 on the questions of the nomination from these sources:

- AHRQ: Evidence reports and technology assessments
    - AHRQ Evidence Reports https://www.ahrq.gov/research/findings/evidence-based-reports/index.html
    - EHC Program https://effectivehealthcare.ahrq.gov/
    - US Preventive Services Task Force https://www.uspreventiveservicestaskforce.org/
    - AHRQ Technology Assessment Program https://www.ahrq.gov/research/findings/ta/index.html
- US Department of Veterans Affairs Products publications
    - Evidence Synthesis Program https://www.hsrd.research.va.gov/publications/esp/
    - VA/Department of Defense Evidence-Based Clinical Practice Guideline Program https://www.healthquality.va.gov/
- Cochrane Systematic Reviews https://www.cochranelibrary.com/
- PROSPERO Database (international prospective register of systematic reviews and protocols) http://www.crd.york.ac.uk/prospero/
- PubMed https://www.ncbi.nlm.nih.gov/pubmed/

Impact of a New Evidence Review

The impact of a new evidence review was qualitatively assessed by analyzing the current standard of care, the existence of potential knowledge gaps, and practice variation. We considered whether it was possible for this review to influence the current state of practice through various dissemination pathways (practice recommendation, clinical guidelines, etc.).

Feasibility of New Evidence Review

We conducted a limited literature search in PubMed from the last five years April 2015 to May 2020. We reviewed all identified titles and abstracts for inclusion and classified identified studies by question and study design to estimate the size and scope of a potential evidence review.

Search strategy
MeSH Terms: copper; water; drinking water
https://clinicaltrials.gov/ct2/results?cond=copper&term=&cntry=&state=&city=&dist=