

# Evaluation of the CDC safe water-storage intervention to improve the microbiological quality of point-of-use drinking water in rural communities in South Africa

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## Abstract

The use of different concentrations of sodium hypochlorite solutions (placebo; 1% and 3.5% sodium hypochlorite solutions) and 2 water-storage containers (traditional plastic container and the improved CDC safe water-storage container) as interventions in 2 rural communities using different water sources (improved vs. unimproved) was evaluated over a period of 4 months. Standard methods were used to determine the presence of indicator organisms (total coliforms, faecal coliforms, *Escherichia coli*, faecal enterococci, *Clostridium perfringens*, male-specific F-RNA and somatic coliphages) in the water samples. The results indicated that the 1% and the 3.5% sodium hypochlorite solutions effectively reduced the numbers of indicator microorganisms to undetectable counts in both types of water-storage containers. However, no statistical differences were seen between the 2 types of water-storage containers in the numbers of indicator microorganisms present in the stored water with the addition of a placebo sodium hypochlorite solution. Compliance of households with the use of the sodium hypochlorite intervention ranged between 60% and 100%. A household questionnaire survey indicated an urgent need for education concerning the risk of waterborne diseases, the proper use of safe household water-storage devices and water treatment processes and improvement of hygiene and sanitation practices in these rural households.

**Keywords:** rural households, safe water-storage container, sodium hypochlorite solution, South Africa, stored drinking water