

Hand disinfection and SARS-Cov-2

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Semmelweis showed that when physicians were made to wash their hands in a chlorine solution, the mortality from puerperal fever in the First Obstetric Ward in Vienna fell from 459 in 1846 to 45 in 1848. By 1975, [Graham Ayliffe](#) in Birmingham had devised a way of [hand-washing](#) that covered every part of the fingers and hands. He described this as follows:

“The preparation [of antiseptic detergent or liquid soap] was applied for 30 seconds by a standard procedure, consisting of five strokes backwards and forwards: palm to palm, right palm over left dorsum, left palm over right dorsum, palm to palm with fingers interlaced, backs of fingers to opposing palm with fingers interlocked, rotational rubbing of right thumb clasped over left palm and left thumb clasped over right palm, rotational rubbing backwards and forwards with clasped fingers of right hand in palm of left hand and clasped fingers of left hand in palm of right hand; hands and wrists were rubbed until the end of the 30-second period, then rinsed under a running tap for 15 seconds and dried, with two paper towels, for 15 seconds.”

This remains the [standard technique](#) for [hand hygiene](#) with soap and water or other disinfectant products.

Initial studies of handwashing assessed efficacy by observing the reduction in bacterial counts, using a logarithmic scale. A reduction of 2 log units means that 99% of bacteria have been removed, of 3 log units means that 99.9% of bacteria have been removed, and so on. [Test methods for viruses](#) have been developed more recently.

Coronaviruses have a [viral envelope](#), which makes them potentially susceptible to surface-active agents such as soap and alcohol. *In vitro*, several hand-rub products with an alcohol content of at least 75% [reduced SARS-CoV-1](#) virus load by at least 4 log units and wine vinegar and 70% ethanol [reduced SARS-CoV-1 load](#) by more than 3 log units. It seems reasonable to extrapolate these results to SARS-CoV-2.

In a [study](#) of over 20,000 person–years, outpatient visits for respiratory illness were 45% lower among army recruits who washed their hand at least five times a day compared with controls. [Jefferson et al](#) reviewed physical interventions to interrupt or reduce the spread of respiratory viruses. They reported an odds ratio of 0.54 for those respiratory infection in those who washed their hands frequently, compared with controls.

Taken together, the studies support the view that frequent and careful handwashing will reduce the chances of catching COVID-19.

Cochrane review

Jefferson T, Del Mar CB, Dooley L, Ferroni E, Al-Ansary LA, Bawazeer GA, van Driel ML, Nair S, Jones MA, Thorning S, Conly JM. Physical interventions to interrupt or reduce the spread of respiratory viruses. Cochrane Database of Systematic Reviews 2011, Issue 7. Art. No.: CD006207. DOI: [10.1002/14651858.CD006207.pub4](https://doi.org/10.1002/14651858.CD006207.pub4).