

## Science and the Coronavirus

As we find our way through the novel coronavirus I have seen a lot of doubt and misunderstanding about the science of it around the 'net.

We are still learning about this coronavirus – as knowledge increases recommendations change with the evolving understanding of the virus. This controversy may lead some people to distrust science as they may believe that science is a collection of things proved. This is not necessarily true. In fact, there is a bit of art in science.

By its very nature science is a moving target. Scientists theorize, invent experiments to prove or disprove their theory, and very often find they didn't express the problem well, or there were flaws in the design or interpretation of the results of an experiment. When this happens they try again. Although negative results are important to science, they are rarely published – this can be a loss for science in general.

The history of science includes devising better ways of observing and quantifying phenomena. This evolution leads to better understandings and interpretations of scientific theories. Scientists don't always have all the data to support or disprove a theory, they make do with what they can observe and measure with what the current state of the art permits. This is why studies are published, peer-reviewed, and argued over. If the data permit, the publication will include degrees of freedom (range of error), a coefficient of correlation, or a 't' or probability attached to the result. Some data are more fluid or imprecise than this allows. Results may be published that others find they can't duplicate. This leads to questioning and discussion of the procedures and results. Anecdotal experience, while less reliable through the lack of controls on the experimental conditions, can contribute value to the discussion, formulation of theories, and the testing of revised theories.

Controversy is a part of the scientific method. Science is only as good as the current knowledge base in a given subject and the state of the art of measurement and observation at that moment in time. No one study offers the answer to a scientific question. Over time additional studies and discoveries lead to a more accurate understanding of a scientific question, observation or conclusion.

