Science in the age of Covid-19 (part 2)

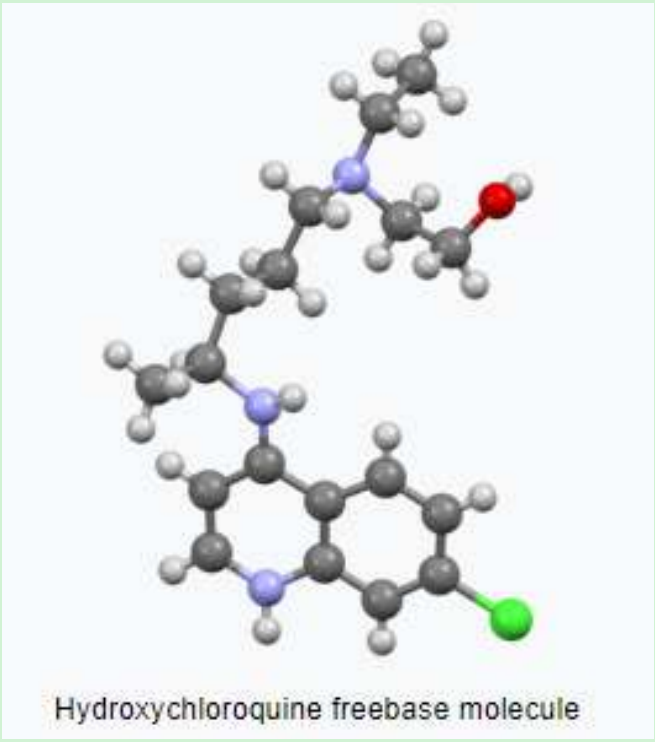
by Wilbur McFadden 2020-6-24

Dr. Anthony Fauci, when he was on stage with President Trump, and the discussion turned to hydroxychoroquine, said that the information in support of that was anecdotal. I don't think everyone understands how anecdotal information has changed in medicine. Anecdotal evidence is in the form of stories that people share about what they have experienced or what they have observed in others. And, of course, what they have heard. Gossip?

A century or more ago, physicians gathered case-studies that presented nuggets of important information about the understanding and treatment of disease. This information was disseminated in journals. Every Medical Society and professional organization had journals that circulated, some widely. They were quickly read and assimilated. In the early days, much of this was anecdotes, although these evolved to contain so much expanded and thorough information, that case-studies still have a role in medicine. Overtime, multiple cases were grouped together because of similarities, and the profession learned more about disease and treatment.

As time went on, they realized that there were errors in drawing conclusions from a small number of cases. One of the early sources to fall was the use of anecdotes in science, particularly in medicine. Often the original story itself was flawed. Important information was left out or mis-spoke. The story, and/or the story teller, was heavily biased, and this introduced error that influenced the results. So much so, that “bias” can only be removed by double-blind studies. Another discovery was that many studies need large numbers of patients, and have to be carried out over a number of years to be valid. We can all remember when a 5 year survival from cancer was the “gold” standard. It's still important psychologically, but cancer prognosis now depends on a variety of factors.

But back to anecdotes. Anecdotes have been flawed for so long in medicine that it's easy to think that everyone understands the use of the term. In a sense, I spent my professional life gathering anecdotes. Every patient encounter was an individual story/experience. But I wasn't “doing” science, gathering and analyzing. I was applying science. I tried to know the difference. When I made a treatment recommendation, is was based on the accumulated medical evidence, not on my opinion. My job was to try to stay informed.



Hydroxychloroquine freebase molecule

Anecdotes are all around us. Almost all our encounters with friends and family, with what we hear on the news or read in sources, inform our view of the world. We often make decisions based on just snippets of information. Besides being incomplete, they're often flawed. Over time—sometimes a long time!---farmers, bankers, teachers, business people, etc. pay attention to what works, and slowly things progress because some are paying attention to the big picture.

The anecdotal information about hydroxychoroquine (the “mother of all anecdotes”) has a short paper trail. On March 13th, James Tordaro, a Silicon Valley investor, tweeted about

the drug, believing it could be a “game-changer”. Within three days, Laura Ingraham had taken it on, and on April 3rd, had an audience with Pres. Trump at the White House. Their excitement was triggered by a study in France that seemed to indicate that hydroxychoroquine might be helpful in the developing corona virus pandemic. (The study did not meet any of the usual scientific standards.) They went from“interested”to “all-in”. Their promotion of the drug led to world-wide use and some level of endorsement by the FDA. It also led to some rushed clinical studies and a rush to publish by the two most respected medical journals in the world! Both published articles in May based on observational studies, NEJM in early May, and two weeks later by Lancet (a British journal). Both were based on the same data collected by a new-comer to the field, and Lancet cased serious doubt on the use of hydroxychloroquine in the treatment of Covid-19, and had immediate impact on its' use.

A deep look by the Guardian into the credentials of the authors of the articles found that one of the authors may have “padded” his credentials. In the words of one critic, his resume is almost “too good to be true”. Both articles have been retracted, which is highly unusual for such well-regarded journals.

So I've spent the last week trying to understand what happened. All the thousands of researchers that publish in major journals have been doing the same thing, and all of them know a lot more than I do, or will ever know. I did find out that “peer” reviewers do nor look at credentials, or the accuracy of the data. They assume that. Rather, they look at how the articles fit in the overall scientific discourse, and how the data supports the conclusions. This story, as the say, is still “breaking news”. And it may be a long time until it is done.