

Research letter

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Infodemic and the spread of fake news in the COVID-19-era

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Saturday 14 March, while the pandemic due to SARS-CoV-2 spread widely in Europe, the French Minister of Health, Olivier Véran tweeted: 'The intake of anti-inflammatory drugs (ibuprofen, cortisone, ...) could be a factor in worsening the infection. If you have a fever, take acetaminophen. If you are already taking anti-inflammatory drugs or in doubt, ask your doctor for advice' [1]. As the hours go by, the tweet garnered the consent of more and more 'followers', and, 3 days later, the 're-tweets' were over 40 000. The University Hospital of Vaud in Lausanne – among others – considered the news as authentic and correct, so claims: 'For the current state of knowledge, the use of anti-inflammatory drugs (ibuprofen, ketoprofen, naproxen, diclofenac, etc.) is not recommended in case of influenza-like illness possibly caused by COVID-19. Paracetamol is recommended in the event of fever requiring treatment'. In the transmission of the news, one of the 'accused' classes of drugs was exonerated (e.g. any reference to cortisone disappeared). At the same time, the preference given to paracetamol became quite a strong recommendation [2]. The British Medical Journal also felt compelled to relaunch the news, reporting some expert opinions on this matter [3].

In the following days, we looked for news in the most popular biomedical libraries. If the report had been real, we would have had to find at least one article from some researchers who studied this issue. To our surprise, the search result offered us no documents. The only somewhat related articles dealt with antiviral drugs with anti-inflammatory properties [4] or showed increased survival in patients with COVID-19-related acute respiratory distress syndrome treated with methylprednisolone [5]. Still, our Facebook contacts, mostly non-doctors, continued to report the information. They tried to warn us not to use those drugs and to notify all their contacts as well. Their action seemed animated by a spirit of solidarity. So what

was bothering us? When we spoke to one of our nurse colleagues, she asked: 'So should I tell my father to stop taking cardioaspirin?'. Our friends, without realizing it and, indeed, trying to make the right action, were spreading potentially devastating news [6]. In the same weeks, we received discordant warnings about the use of ACE-inhibitors and sartans: now that they could have aggravated a possible COVID-19, now that they could have alleviated the symptoms. The media 'tam-tam' was so pounding that the European Society of Cardiology felt compelled to intervene to try to limit the individual stances [7].

But are these fake news? In technical terms, no. They come from sources believed to be reliable, and there is no reason to doubt their 'authenticity'. They are not words fictitiously attributed to someone. However, in most cases, they are real but inaccurate news [8].

At the beginning of the pandemic, many of our colleagues said that it would not have been a very different situation from seasonal flu. They were wrong. While non-expert people, since the beginning, spread alarmed and frightened messages, getting closer to the truth than the experts. What is the cause of this 'blindness'?

We, physicians, push ourselves often in challenging assessments when we have very little data, and we are often 'over-confident' in our expertise. In our daily clinical activity, we continuously rely on our ability to 'be convincing' the others, even if we have insufficient data, and the degree of uncertainty is very high. Our ability is based on the fact that our patients have to trust us. However, our strength does not always allow us to see the data properly.

In the next weeks, our Whatsapp chats and private mailboxes were overwhelmed by an avalanche of information, many of which were correct and authentic, but most were unusable. Although we realized that the new information led more to an increase in the entropy of the system rather than an increase in our knowledge, we also made ourselves accomplice in this self-blinding mechanism. Each of our re-tweets, each of our articles shared in a public chat increases the background noise. While potentially, our information may increase the signal, it is most likely only reducing the signal-to-noise ratio. The diffusion of social media has opened up an exciting field, capable, at least potentially, of increasing the degree of clarity and democracy in sharing scientific data. In the same way, it has dramatically increased the degree of credibility of personal opinions (beliefs, considerations,

etc.) and allowed them to spread more rapidly. All of this is the opposite of democracy: opinion, contrary to facts, is always of the most influential people. The sharing of scientific data has two critical aspects: the presence or absence of ‘filters’ capable of increasing the reliability of the information [9]; and individual responsibility for making information public and disseminating [10]. Both aspects should be considered very seriously by every member of the scientific community.

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Conflicts of interest

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