COVID-19 Pandemic: An Urgent need for practical and Validated Medical Information for Health Professionals. A Focus on the Experience of the Strasbourg University Hospital

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ABSTRACT

Critical reading is crucial to update clinical management of Covid-19, which remains a largely unknown disease. In this setting, too much information may "kill" valuable information, in particular for health professionals in direct contact with patients. This is particularly the case on social networks (LinkedIn, Facebook, Twitter, etc.) where scientific information and false information are put online and shared with the public, without any differentiation. In this setting, we briefly report here how we have organized a pragmatic free on-line repository, as a website (https://www.groupedeveillecovid.fr/), designed for health professionals, in order to incorporate validated medical information in clinical practice as quickly as possible.

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On March 2020, Alsace, Eastern France (1.9 million of inhabitants), was the first place where the SARS-CoV-2 pandemic began in France. The prevalence of the virus (15%) is one of the highest with that of Wuhan, Lombardy, Madrid areas and New York City. At the time of this writing, more than 1,178 patients died from Covid-19 in Alsace and hundreds are still hospitalized. Faced to an unprecedented public health crisis, with very few guidelines have been available. Health professionals are inundated with information ranging from general informations or rumors related to social media (as President Trump's claims about hydroxychloroquine, the antimalarial drug he's touting as a coronavirus treatment, and about the need to take disinfectants to purge the virus from the body), or scientific medical information, often controversial, related to preprints, to peer-reviewed articles [1,2].

In practice, there were initially no recommendations for primary care health professionals, so the referral teaching hospital in our area was quickly overwhelmed with phone calls from caregivers asking what to do?.

However, critical reading is crucial to update clinical management of COVID-19, which remains a largely unknown disease. In this setting, too much information may "kill" valuable information, in particular for practitioners in direct contact with patients. This is particularly the case on social networks (LinkedIn, Facebook, Twitter, etc.) where scientific information and false information are put online and shared with the general public, without any differentiation (without any value scale) [3].

Between two and three million public messages had been shared in French-language conversations on social media, just two days after self-isolation was put into place to tackle the spread of COVID-19 [4]. Analysis of these messages have showed that the main "medical" topics addressed were changing habits (26%), public health policies (19%), contradictory positions of some experts (11%), and true medical news (10%, extracted from scientific journals) (figure 1).
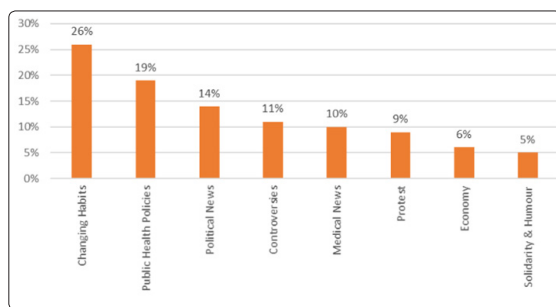
Figure 1: Semantic analysis of more than 3 million posts by Ipsos (https://www.ipsos.com/sites/default/files/ct/news/documents/2020-03/social-media-as-an-emotional-outlet-in-times-of-crisis-ipsos.pdf)

The analysis of medical literature concerning Covid-19 requires a very wide range of epidemiological, biological and clinical expertises. The main challenge is the large amount of publications that needs to be assessed in almost real time but also in a form directly applicable in the clinic for practitioners. What is the take home messages for the clinicians? What are the points to remember or learn? Thus behind the scientific character of the manuscripts, there is a need for pedagogy.

We briefly report here how we have organized a pragmatic free on-line repository (https://www.groupedeveillecovid.fr/), designed for clinicians, in order to incorporate validated medical information in clinical practice as quickly as possible. The effort made by numerous medical journals, including the most prestigious medical journals (The New England Journal of Medicine, The Lancet, The Annals of Internal Medicine, The British Medical Journal, The JAMA Archives of Internal Medicine, Journal of Clinical Medicine, Nature Medicine, PloS Medicine, etc.), to provide free access to Covid-related publications, definitively helped us in this process [5].

A multidisciplinary group of about thirty MDs of all specialties working in Strasbourg University Hospital (Strasbourg, France) is searching for pre-prints and peer-reviewed articles concerning six main aspects of Covid-19: epidemiology, pathogenesis, clinical and biological features, therapeutics, and guidelines using PubMed, Redmix, Google Scholar, and MedrXiv. The manuscripts are summarized, with an emphasis on the level of evidence, the potential limitations, and pragmatic take-home messages for daily practice. Each article and summary are shared among all members of the group, and discussed before publication.

In addition, artificial intelligence has been developed to search the web for relevant information on Covid-19. After automatically exploring internet and downloading the articles, we use a system of automatic paper classification and recommendation, which helps scientists in their daily research work. It first applies a content-based statistical classification method, which is similar to general text classification. Then it uses K-nearest neighbors algorithm that outperform others classification methods. Using phrases in addition to words and a good feature selection strategy such as information gain can improve system accuracy and reduce training time in comparison with using words only. In the next step, we will combine the articles content information as well as citation structure to improve the classification. In fact, scientific papers, different from general documents, do not exist in isolation but are linked together by a citation link network.

Since March 22th, 329 articles analyzed by our team and were integrated, the website had more than 27,000 visitors and more than 330,000 pages were read. Peaks of visits notably corresponded to the different studies on hydroxychloroquine. The five most downloaded articles concern, pharmacological treatments (68.7%), dissemination and survival of the virus in the environment (13%), pregnancy (10.7%), immunopathogenesis (7.5%) and barriers and social distancing (2.1%). As see in the figure 2, there was a parallel between the spread of the epidemic and the number of visits to our website. Of interest, readers come from all areas of the country (Belgium, Luxembourg, Switzerland and a number of French-speaking African countries), and all fields of medicine, including many GPs.
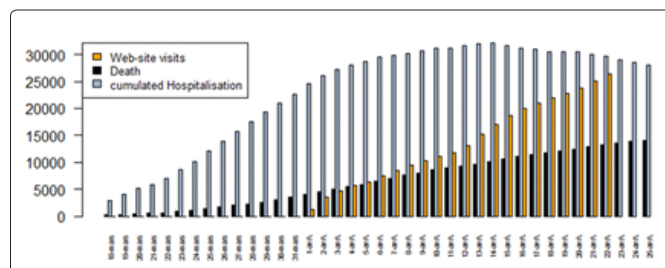

Figure 2: Number of cumulated death, hospitalization and groupedeveillecovid website visits the first 5 weeks of the covid-19 outbreak in Strasbourg (France)

In the next weeks, we will soon propose access to a selection of articles to other healthworkers and the general population. A translation in the world's predominant languages is in progress as well as the development of a mobile application for smartphones.

We definitively believe that real time, pragmatic, multidisciplinary assessment of the state of the art of the literature, is crucial in the fight against this multi-faceted and evolving disease. This approach is complementary to that of scientific journal publishers, as the MDPI publishing group. It allows the dissemination of validated and digested information, accessible to the greatest number of people.

In our opinion, it is also a way to fight against fake news and other false information disseminated by social networks (Facebook, Twitter, Instagram, etc.) but also by the traditional press journals (The Times, The Herald Tribune, The Washington Post, Le Monde, Le Courrier International, etc.). The latter are indeed most often in search of sensational information, scientific scoop or polemical information.

In addition, this approach is complementary to the one carried out by the French Ministry of Solidarity and Health (Ministère des Solidarité et de la Santé, France), which has implemented on its website various practical elements on the daily management of patients infected by Sars-Cov-2 by different health professionals [6].

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