

The rightful place of extra-scientific values in open science

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Open science (OS) and the Covid-19 pandemic

- OS contributed to save lives during the Covid-19 pandemic (Besançon et al, 2021).
- So did science, steered by and applied following extra-scientific considerations.
- However OS, and science in general, should be preserved from illegitimate influence of extra-scientific factors (Besançon et al, 2021).

Stage	Problem	Solution	Helps to know...	Agents
Data collection and analysis 	Waste of research (duplication)	Preregistration	Who is doing what, how and when?	Researchers to adopt it Journals to enforce it
	Ethical concerns	Preregistration	Is the study in line with good research practices?	
	Flawed studies	Registered reports	Is the study designed appropriately to answer the question of interest?	
Publication process 	Expedite reviewing	Open reviews	Are the findings verified by independent researchers?	Researchers to adopt it Journals to enforce it Institutions and funding agencies to value it Policymakers to allow it
	Distrust of published results	Data and code sharing	Can scientist obtain similar results from the same data?	
	Conflict of interests	Disclosure of conflict of interests, including editorial roles	Are the authors incentivized to publish these findings and to publish in this journal?	
Communication 	Misuse of preprints	Collaboration between journalists and scientists	Can the public trust scientific news in the media?	Journalists and news editors Institutions
	Misleading headlines, exaggerations			
	Paywalled manuscripts	Open Access on all manuscripts	The exact content of manuscripts used as a source. Can accelerate research through universal access to scientific findings	Researchers to favor it Policymakers and institutions to enforce it

What happens when extra-scientific factors are not properly controlled (Gautret et al., 2020)



Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial [☆]

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ABSTRACT

Background: Chloroquine and hydroxychloroquine have been found to be efficient on SARS-CoV-2, and reported to be efficient in Chinese COVID-19 patients. We evaluate the effect of hydroxychloroquine on respiratory viral loads.

Patients and methods: French Confirmed COVID-19 patients were included in a single arm protocol from early March to March 16th, to receive 600mg of hydroxychloroquine daily and their viral load in nasopharyngeal swabs was tested daily in a hospital setting. Depending on their clinical presentation, azithromycin was added to the treatment. Untreated patients from another center and cases refusing the protocol were included as negative controls. Presence and absence of virus at Day6-post inclusion was considered the end point.

Results: Six patients were asymptomatic, 22 had upper respiratory tract infection symptoms and eight had lower respiratory tract infection symptoms.

Twenty cases were treated in this study and showed a significant reduction of the viral carriage at D6-post inclusion compared to controls, and much lower average carrying duration than reported in the literature for untreated patients. Azithromycin added to hydroxychloroquine was significantly more efficient for virus elimination.

Conclusion: Despite its small sample size, our survey shows that hydroxychloroquine treatment is significantly associated with viral load reduction/disappearance in COVID-19 patients and its effect is reinforced by azithromycin.

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1. Introduction

In late December 2019, an outbreak of an emerging disease (COVID-19) due to a novel coronavirus (later named SARS-CoV-2) started in Wuhan, China and rapidly spread in China and outside [1,2]. The WHO declared the epidemic of COVID-19 as a pandemic on March 12th 2020 [3]. According to a recent Chinese study,

FACT: Clinical trials confirm that hydroxychloroquine does not prevent illness or death from COVID-19.

Hydroxychloroquine or chloroquine, a common treatment for malaria and certain autoimmune diseases, has been studied as a preventative treatment for COVID-19. Evidence from these studies shows that hydroxychloroquine has little to no impact on illness, hospitalization, or death.



#Coronavirus

#COVID19

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[☆] Given his role as Editor in Chief of this journal, Jean Marc Rolain had no involvement in the peer-review of this article and has no access to information regarding its peer-review. Full responsibility for the peer-review process for this article was delegated to P.R. Hsueh.

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⁵ equal work



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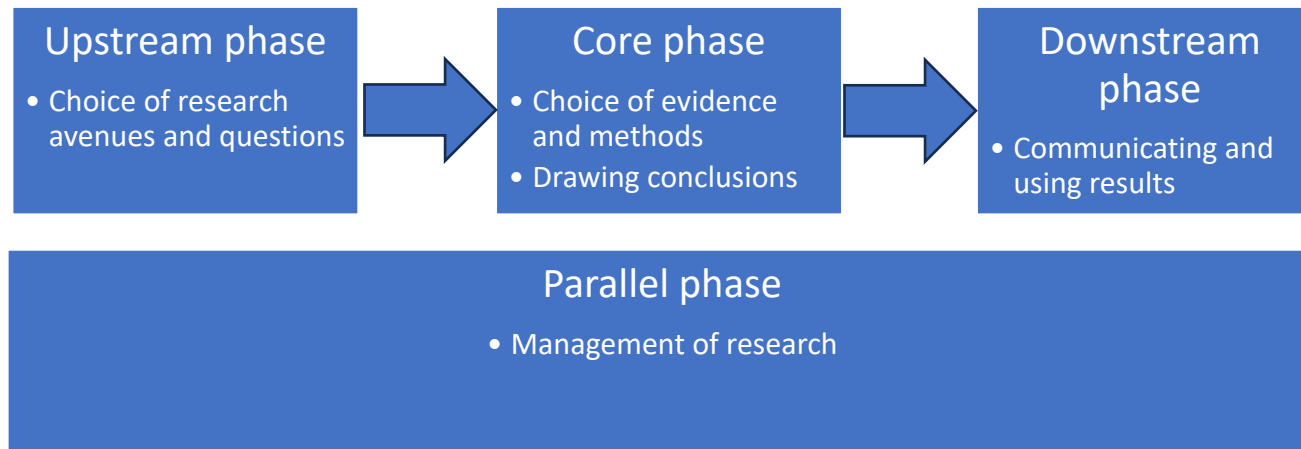
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1.1 Intra- and extra-scientific values

- Value: a desirable quality
 - intra-scientific (simplicity, external and internal coherence, empirical adequacy, scope, fruitfulness...) or extra-scientific (moral, social, political values)
 - necessary to make choices which are not rule-governed, when logic and evidence alone are not sufficient, in various stages of scientific inquiry





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1.2 The philosophical debate about values in science

- Growing trend (e.g. Douglas, Elliott) to legitimate extra-scientific value influence in *all* phases of scientific inquiry, including the core phase, e.g.:
 - Because theory choice is underdetermined by evidence and inevitably influenced by value-laden background assumptions... but the latter can be arrived at by intra-scientific considerations
 - Because scientists have to consider the consequences of making errors when accepting hypotheses... but one can distinguish the scientific corpus from claims taken as a basis for action
- On the contrary, extra-scientific values should be allowed *only if* (Hansson; Stamenkovic, 2024):
 - the objectivity, truth and reliability of scientific knowledge is preserved (for future research, for multi-purpose applications)
 - the autonomy of science results users is preserved.
- That means that:
 - The scientific corpus should keep high entry requirements;
 - Uncertainties associated with scientific claims should be stated clearly instead of being bridged with values.





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2.1 OS and its values

- **Goals of OS (US NAS 2018, BRS 2012):**
 1. make scientific research more replicable and reliable (true / empirically adequate for good reasons);
 2. make scientific information accessible and relevant to others (scientists + non-scientists: decision-makers, the general public);
 3. promote scientific discovery and innovation.
- **Means to reach this span all research phases, e.g.:**
 - more systematically publish scientific results (Chalmers et al. 2013);
 - preregister studies (FDAAA 2007; Kupferschmidt 2018);
 - promote open-access publishing (Else 2018);
 - post papers to preprint websites (Bourne et al. 2017);
 - make all study data publicly available (NAS 2018);
 - make peer review more transparent (Lee and Moher 2017);
 - encourage or mandate sharing of study materials and computer code (Nosek et al. 2015);
 - report the progress of studies in real time so that other scientists can provide input (Foster and Deardor 2017; NAS 2018);
 - promote successful communication between experts and decision makers so they can make effective use of scientific information (Holloway et al. 2018; Royal Society 2012)
 - ...



2.1 OS and its values (UNESCO)

- **intra-scientific values:**
 - **quality, rigour,**
 - **replicability**
 - **reliability**
 - **scrutiny, critique**
- **intra-/extra-scientific values:**
 - **integrity**
 - **diversity, inclusiveness**
 - **transparency**
- **extra-scientific values:**
 - **responsibility, accountability**
 - **sustainability**





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The *wrong* place of extra-scientific values in OS

- According to (some) proponents of extra-scientific values in science (e.g. Elliott, 2019), philosophers / science studies scholars / journalists can further the goals of OS by clarifying and making explicit value judgements which scientists make and cannot themselves recognise.
- But this is a dogmatic projection of the values in science literature on scientific activity. This is not about value judgements but rather:
 - the (*scientific*) 'strengths and weaknesses' and limitations of the design and results of various studies,
 - disagreements among members of the scientific community (about the evidence used / the methodology of studies / the interpretation of results)
 - whether alternative results might have been obtained if different studies had been performed.
- Instead of asking the public / decision-makers to inspect what value judgements have been made by scientists and pick those which accord with their own values...
- ... or devising complicated case-by-case approaches where value judgements are inspected by the public through deliberative processes...
- it seems much simpler and efficient for solving controversies to have an essentially value-free corpus and then allow the public to apply their own values.





2.2 The rightful place of extra-scientific values in OS

- On the contrary, pursuing the:
 - intra-scientific goal of ensuring replicability and promoting scientific discovery
 - intra- and extra-scientific goal of ensuring reliability and promoting scientific innovation.

requires minimising extra-scientific values.

- More precisely, extra-scientific values should only be allowed to *increase the levels of evidence required* (LER) for a claim to be accepted (i.e. to *strengthen the truth* of the scientific corpus) (Hansson, 2014-2018; Stamenkovic, 2023, 2024):
 - If we allow extra-scientific values to lower the LER, we run the risk of accepting false claims into the corpus, which can have detrimental consequences both:
 - Within science (future research is based on false claims)
 - Outside of science (scientific knowledge is used for all sorts of practical applications)
 - We can still allow extra-scientific values to decrease the LER to accept a claim *as a basis for action*:
 - Within science: to test an uncertain hypothesis
 - Outside science: to take precautionary measures.





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3. *Your* view of the influence of extra-scientific values in *your* scientific work?

- Do you, practitioners of OS, make choices on the basis of extra-scientific values in your scientific practice?
- If yes, how do they impact your research exactly? At which stage, what type of influence, etc.?
- Why do you allow this influence? Which values?

