COVID-19 as the underlying cause of death: disentangling facts and values

COVID-19 as the underlying cause of death. Disentangling facts and values[1]

Abstract

In the ongoing pandemic, death statistics influence people's feelings and government policy. But when does COVID-19 qualify as the cause of death? As philosophers of medicine interested in conceptual clarification, we address the question by analyzing the World Health Organization's rules for the certification of death. We show that for COVID-19, WHO rules take into account both facts (causal chains) and values (the importance of prevention).

Keywords: COVID-19; causality; underlying cause of death.

Since COVID-19 was declared a pandemic by WHO on 11th March 2020, the number of deaths due to the virus has become very salient for all of us. On an individual level, mortality statistics influence our emotional and cognitive uptake of the situation, and on a collective level they are key to epidemiological studies and models, which in turn inform and direct political and policy decisions. But when is someone's death "due to COVID-19" or, more specifically, when does COVID-19 qualify as the underlying cause of death? This is the conceptual question we tackle in this contribution, by analyzing the rules for the certification of death issued by the World Health Organization (WHO). As philosophers of medicine working on the methodology of current research and practice and interested in conceptual clarification, we believe that getting clear on this issue may promote a better understanding of what we are currently living through and ensure wiser evaluation of policies.

In many countries mortality statistics depend on the definitions and regulations issued by WHO (WHO, 1979) and are supplemented by the instructions and codifications contained in the International Classification of Diseases (ICD) (WHO 2018). These are intended for the doctor who has to fill in the death certificate within 24 hours of a person's death. The certificate should contain all conditions the doctor considers causally and etiologically relevant to the person's death, but one single underlying cause of death must be specified. It is defined as "the disease or injury that initiated the train of events leading directly to death,

[1] This note belongs to the Topical Collection "Seeing Clearly Through COVID-19: Current and future questions for the history and philosophy of the life sciences", edited by G. Boniolo and L. Onaga.

or the circumstances of the accident or violence which produced the fatal injury" (WHO 1979, 6). This definition underpins a mechanistic conception of causality. However, the guiding principle that should inform the selection of one single underlying cause is explicitly the possibility of prevention of deaths to the benefit of public health: "From the standpoint of prevention of deaths, it is important to cut the chain of events or institute the cure at some point. The most effective public health objective is to prevent the precipitating cause from operating" (WHO 1979, 6). Thus, a prudential or normative principle is used to select from among the causes pertinent to someone's death. As Lyndahl pointed out, the underlying cause should be a factor that can be intervened on (Lyndahl 1984). It means that the selection principle underpins a manipulative conception of causality.

This manipulative principle of selection is even more relevant in the case of the ongoing pandemic. In a new document from WHO we read that:

> A death due to COVID-19 is defined for surveillance purposes as a death resulting from a clinically compatible illness, in a probable or confirmed COVID-19 case, unless there is a clear alternative cause of death that cannot be related to COVID disease (e.g. trauma). There should be no period of complete recovery from COVID-19 between illness and death. A death due to COVID-19 may not be attributed to another disease (e.g. cancer) and should be counted independently of preexisting conditions that are suspected of triggering a severe course of COVID-19. COVID-19 should be recorded on the medical certificate of cause of death for ALL decedents where the disease caused, or is assumed to have caused, or contributed to death (WHO 2020, p.3).

On the one hand, when COVID-19 is not part of the causal chain that leads directly to death, it should not be indicated as the underlying cause of death. On the other hand, COVID-19 would be correctly considered the underlying cause of death even if accompanied by pre-existing chronic conditions or conditions capable of aggravating the clinical picture and increasing the risk of death. In the case of COVID-19, the situation is further complicated by the fact that a death caused by COVID-19 could be correctly recorded even in cases where the infection is only suspected or probable. Not only does the definition of death caused by COVID-19 admit "a probable case" of infection, but also the explicit instructions provided by WHO recommend that even in the case of mere suspicion of COVID-19, that is to say in the absence of swab or serological testing or other diagnostic imaging procedure that reliably confirms the infection, the disease must in any case be indicated as the underlying cause of death (WHO 2020). If such a recommendation is at first glance rather surprising – the notion of "suspicion" linked to the diagnosis is in fact very vague and subject to conflicting

interpretations – it conforms to another pointer reported in the International Classification of Diseases (ICD):

> the acceptability or otherwise of a causal sequence for the coding of mortality depends not only on medical assessments, but also on epidemiological and public health considerations. For this reason, a medically acceptable causal relationship could instead be judged unacceptable in the coding instructions as a later element in the causal chain is deemed more important from a public health perspective (WHO 2016, p. 33)

Therefore epidemiological and public health reasons make it possible to indicate COVID-19 as the underlying cause of death even in the case of a mere unconfirmed suspicion, and thus to identify COVID-19 as the underlying cause of death even in the presence of other and independent lethal causal chains. Such a rule conforms to the manipulative principle of the underlying cause selection discussed above: the underlying cause must be selected with prevention and public health actions in mind.

A brief comparison with HIV exists, as Covid-19 and AIDS present various similarities on the social and healthcare strategy levels (Heargreaves et al. 2020, Logie and Turan 2020). In 1999 ICD-10 introduced a coding rule attributing to HIV all causes of death which are ill-defined or unknown, as well as cirrhosis of viral cause, unknown cause and tuberculosis, in people who are HIV positive[2]. This resulted in a far greater number of conditions being coded as HIV-related than before. However, more recent studies have shown that such an approach may not be optimal where the aim is to monitor other emerging causes of death, including some that may be related to HIV treatment, and suggest it is preferable to return to categorizing causes of death according to organ system or etiology/pathology (see e.g. Hernando et al. 2012, Karat et al. 2012, Mocroft at al. 2004). Consequently other rule systems for death coding are now being proposed for AIDS. These include CoDe (Kowalska et al. 2011). Here again, prevention and public health actions inform the decision about which rules for the certification of death are preferable[3].

---

[2] In ICD-10, vol.2 it is stated that "The purpose is to produce the most useful mortality statistics possible. Thus, whether a sequence is listed as 'rejected' or 'accepted' may reflect interests of importance for public health rather than what is acceptable from a purely medical point of view. Therefore, always apply these instructions, whether they can be considered medically correct or not" (WHO 2016, 56)

[3] A comparison with other coronavirus diseases like Middle East respiratory syndrome (MERS) and Severe acute respiratory syndrome (SARS) may be relevant, too. However, even if the need to distinguish between MERS/SARS as the cause of death and dying of other causes with MERS/SARS as co-morbidity has been underlined, no specific guidelines have been released by WHO. Still, it is possible to refer to ICD-11 Reference Guide, which merely states that those infectious disease cannot have any further cause.

In conclusion, a statement on a death certificate, identifying COVID-19 as the underlying cause of death, may be considered a non-purely descriptive predicate, as grounded on both factual (causal chains and the patient's medical conditions before and at the time of death) and non-factual reasons (the importance of prevention and the epidemiological clause exception). The problem of objectively identifying the "real" cause of death is not only relevant from a conceptual point of view but has also many important practical consequences with regard to epidemiology, public health interventions and policies, health communication to the wide public, and political decisions. This is not the place to discuss these wider implications, but for the future we would like to suggest a more transparent discussion of the principles informing death statistics from healthcare authorities.

References

Hargreaves, J., Davey, C., Auerbach, J., Blanchard, J., Bond, V., Bonell, C., ... & Doyle, A. (2020). Three lessons for the COVID-19 response from pandemic HIV. The Lancet HIV, 7(5), e309-e311.

Hernando, V., Sobrino-Vegas, P., Burriel, M. C., Berenguer, J., Navarro, G., Santos, I., ... & del Amo, J. (2012). Differences in the causes of death of HIV-positive patients in a cohort study by data sources and coding algorithms. Aids, 26(14), 1829-1834.

Karat, A. S., Tlali, M., Fielding, K. L., Charalambous, S., Chihota, V. N., Churchyard, G. J., ... & Omar, T. (2017). Measuring mortality due to HIV-associated tuberculosis among adults in South Africa: comparing verbal autopsy, minimally-invasive autopsy, and research data. PLoS One, 12(3), e0174097.

Kowalska, J. D., Friis-Møller, N., Kirk, O., Bannister, W., Mocroft, A., Sabin, C., ... & D'Arminio Monforte, A. (2011). The Coding Causes of Death in HIV (CoDe) Project: initial results and evaluation of methodology. Epidemiology, 516-523.

Lindahl, B. I. B. (1984). On the selection of causes of death: an analysis of WHO's rules for selection of the underlying cause of death. In Nordenfelt L., Lindahl B. I. B. (eds), Health, Disease, and Causal Explanations in Medicine (pp. 137-152). Springer, Dordrecht.

Logie, C. H., & Turan, J. M. (2020). How do we balance tensions between COVID-19 public health responses and stigma mitigation? Learning from HIV research. AIDS and Behavior, 1-4.

Mocroft A, Gatell J, Reiss P, et al. Causes of death in HIV infection: the key determinant to define the clinical response to anti-HIV therapy. AIDS. 2004;18:2333–2337

World Health Organization (1979). Medical certification of cause of death: instructions for physicians on use of international form of medical certificate of cause of death. Geneva: World Health Organization.

World Health Organization (2018). International Statistical Classification of Diseases and Related Health Problems, 11th revision (ICD-11), Reference Guide, https://icd.who.int/icd11refguide/en/index.html (accessed Sept 14, 2020).

World Health Organization (2020). International guidelines for certification and classification (coding) of COVID-19 as cause of death, https://www.who.int/classifications/icd/Guidelines_Cause_of_Death_COVID-19.pdf?ua=1 (accessed September 14, 2020).