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Letter to the Editor

Reframing the problem of the fomite transmission of COVID-19



Sir,

The COVID-19 routes of transmission have recently been described in the guidance article produced jointly by the British Infection Association, Healthcare Infection Society, Infection Prevention Society and Royal College of Pathologists, which also indicates “how likely it is that transmission can occur via a given route” [1]. Unfortunately, a closer look at the guidance’s qualification of the fomite transmission route as “possible” reveals a more general flaw in the scaling, and the very meaning, of the variable “likelihood” that the authors adopt.

The guidance qualifies the fomite transmission as ‘possible’ on the basis of an analysis of 17 studies published between 1st January and 11th May 2020. This is a rather modest and also dated body of research, which is moreover significantly affected by the fact that no less than 15 of 17 papers reviewed specifically address the question of SARS-CoV-2 surface contamination. Judging by the composition of this corpus, the guidance continues a long-term trend by which the question of the spread of COVID-19 via fomites is largely substituted by that of environmental contamination with SARS-CoV-2. Nevertheless, the attempt in the guidance to assess the ‘likelihood’ of fomite transmission represents a significant epistemological shift.

Given the difficulty of obtaining direct evidence of the transmission of COVID-19 through fomites, it is perfectly understandable that research has focused on such transmission route’s prerequisites. However, among its various conditions – which include a surface conducive to the ‘survival’ of a virus, suitable means of mechanical transference, sufficient viral load, and well-disposed receiver [2,3] – it is the isolated question of the virus’s stability on surfaces that has been the focus of most of the research efforts.

In this context it is enlightening to look at the citation history of an early and highly influential laboratory study [4], to which the authors of the guidance also refer, in which van Doremalen *et al.* compared the surface stability of SARS-CoV-2 with that of SARS-CoV-1. Within two months of its publication in mid-March 2020, 153 articles had referred to it specifically in the context of the fomite transmission of COVID-19, and established a pattern of practice that was to remain virtually unchanged: (1) the effective substitution of the issue of environmental contamination for that of fomite transmission; (2) failure to put this substitution in context. Among more than 1200 articles I could identify as referring to

van Doremalen *et al.*’s study later in 2020 (between April 2020 and January 2021), nine laboratory studies, 14 studies on hospital environments, seven studies conducted outside hospitals, and 13 review articles directly addressed the issue of surface contamination. In almost all of them, the evaluation of the role of surface contamination in COVID-19 transmission was plainly disregarded. In these papers, the switchover between fomite transmission and environmental contamination thus emerged as something taken for granted. The price for this reductive approach was eventually clear: it was impossible to do any better than to declare fomite transmission possible [5].

At this point, however, the guidance breaks with the ‘tradition’, in the sense that its characterization of fomite transmission as ‘possible’ is intended to express a degree of likelihood. Inspired by Shah *et al.* [6] who developed a classification of the likelihood of infection in order to get over the limitations of common testing methods when applied to neonates, the authors of the guidance adopted five categories to assess the “likelihood of transmission via different routes”. Unfortunately, confusion results, for if “confirmed”, “probable”, “possible”, “unlikely”, and “confirmed no infection” may make sense as degrees of likelihood of a hypothesis formulated in relation to registered infection cases, the meaning of a scale of this kind is obscured and its very construction questionable when it comes to COVID-19’s transmission routes *in abstracto*. Yet the guidance oscillates between the two attributions.

The guidance’s assessment of the fomite transmission route is symptomatic to this ambiguity and at the same time brings incoherence to its general argumentation. Wedged between ‘probable’ and ‘unlikely’, the likelihood of the ‘possible’ fomite route seems in-between. This conclusion is however unrelated to the force of the fomite-hypothesis as applied to any registered cases of infection, for these are simply absent from the studies on the SARS-CoV-2 surface stability that the authors have reviewed.

With regard to the fomite transmission route, then, its qualification as ‘possible’ is not signalling the degree of its ‘likelihood’, but only its theoretical possibility, which the great majority of studies devoted to the subject of environmental contamination by SARS-CoV-2 have been inferring through and beyond 2020. In the context of growing efforts to reframe the question of fomite transmission in terms of its probability (or risk) [3,5,7], instead of focusing on its bare possibility, the blurring concept of ‘likelihood’ turns out to veil the conservative stance of the guidance.

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