



# Evidenced-based infection prevention and control (IPC) guidelines: are just not evidenced-based

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One of the principles of evidence-based guidelines (EBGs) is to enable registrants to practise effectively.<sup>1</sup> But what if the guideline writers recommend unsafe practice? Presented here are examples of EBG failures with two examples of unsafe recommendations. The first relates to nosocomial tuberculosis (TB) from the National Institute for Clinical Excellence (NICE), and the second to SARS-CoV-2 precautions.

## Tuberculosis guidelines

The NICE guidelines for TB updated in 2019<sup>2</sup> omit a recommendation to use respiratory protection equipment (RPE) (ie, FFP3 masks) unless the TB strain is drug-resistant. (NB communicability is unrelated to drug resistance.) In 2018, a report was published of cross-transmission from a patient to a healthcare worker (HCW) who followed the NICE guidelines.<sup>3</sup> The patient and HCW met once during an aerosol generating procedure (AGP).<sup>3</sup> This report was sent to NICE with the request that RPE be reassessed. Had there been criminal involvement, the strain analysis would have been sufficient to convict. This was not enough for NICE. Their personal communication stated: *'we only consider systematic reviews and randomised controlled trials'*. Thus, procedure recommendations and the EBG process was unchanged; staff remain at risk.

## SARS-CoV-2

In the UK, there are one EBG<sup>4</sup> and two national policy manuals<sup>5,6</sup> related to SARS-CoV-2 infection prevention. The multi-society EBG concluded that SARS-CoV-2 transmission by droplets was 'probable', and that airborne transmission during AGP was 'possible'.<sup>4</sup> However, there was a critical omission; they failed to define and reference definitions of both droplet and airborne transmission.<sup>4</sup> Thus, their statements on transmission are unsupported by evidence. Their first recommendation regarding prevention was to 'adhere to regulations currently imposed by your government'.<sup>4</sup> This is inexplicable; their aim was to provide 'evidence-based recommendations'. Their assessment of the evidence was also questionable. The methods were reported to be in accordance with NICE.<sup>4</sup> Note above that NICE refused to include evidence from a case report, yet this EBG included a letter about a flight on which no transmission arose in support of droplet transmission being 'probable'.<sup>4</sup> The EBG reviewers missed the opportunity to correctly assess the required precautions, as they omitted to define and evidence key definitions and used questionable reports as supporting evidence. [Droplet only respiratory transmission being unevidenced].

## National policy Manuals

Both the Scottish and English infection prevention and control manuals (IPCMs)<sup>5,6</sup> used shared literature reviews. There is insufficient room here to assess all

productions since the start of the pandemic. Presented here are comments on their current recommended practice that are worthy of note.

## Scotland

The Scottish literature review<sup>7</sup> from 2020 still uses the discredited droplet/aerosol delineation of  $\leq 5 \mu\text{m}$ ; this is unsupported by evidence.<sup>8</sup> Further, it states *'Droplets of less than 20  $\mu\text{m}$  can remain suspended in the air for many minutes'*.<sup>7</sup> This is true. The aerosol scientists have shown anything  $< 100 \mu\text{m}$  is inhalable.<sup>8</sup> Thus, what Scotland is describing as droplets remaining in the air for many minutes, are inhalable aerosols. Their assumption of the mode of transmission based on particle size is wrong. The evidence of a move to accepting aerosol transmission is however seen in the manual's A-Z.<sup>9</sup> SARS-CoV-2 is transmitted by 'respiratory particles'. Unfortunately, there are no 'respiratory particle precautions' so why this term is used is uncertain. They are hinting that spread is by aerosols using the term 'respiratory particles' but failing to recommend RPE unless AGPs. Nevertheless, as the reported physics is incorrect, the recommendation to use RPE just for AGPs—is itself unevidenced.

## England

In their A-Z,<sup>10</sup> it states: *'the distinction between droplet and aerosol transmission is not always clearly defined'*. This is certainly true in this IPCM. In their glossary, droplet transmission is unhelpfully described as: *'The spread of infection from one individual to another by droplets containing infectious agents'*.<sup>11</sup> In their main document droplets are apparently able to *'penetrate the respiratory system to above the alveolar level'*.<sup>12</sup> The question is, without inhalation, how do they get down there? Also of note, there is no longer any size delineation.<sup>11,12</sup> The mode of transmission for SARS-CoV-2 is listed as 'droplet/airborne' with the usual unevidenced need for RPE reserved for AGPs.<sup>10</sup> As they defer to the Scottish IPCM for literature reviews,<sup>13</sup> the errors applying to the Scottish IPCM also apply here. The AGPs/HCW acquisition association has been questioned because most AGPs do not increase aerosol production; thus, the association is now considered related to closeness of HCWs to infectious, symptomatic, patients for long periods of time.<sup>14</sup> Ergo, as HCWs work close to infectious patients for periods of time without AGPs, they should use RPE. Further, both IPCMs<sup>5,6</sup> omit evidence that we all produce aerosols, the pathogens are mainly in the small aerosols, and most respiratory diseases are airborne.<sup>14</sup>

## Summary

These 'EBG'<sup>4,7,9-13</sup> should have used evidence to keep us safe. They failed because they did not accurately present the physics of how SARS-CoV-2 transmits; they failed to evidence their definitions and thus erred in making

recommendations. These documents may be marked, or assumed to be EBG, but this of itself is no guarantee that evidence within supports recommendations. These EBGs<sup>4-7 9-13</sup> are therefore powerless to enable registrants to practise effectively.<sup>1</sup>

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