
Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Letter to the Editor

# The eighth alternative to evidence based medicine in the early era of the COVID-19 pandemic: Too much emergency and emotion, too little evidence

"*Clinical decisions should, as far as possible, be evidence based. So runs the current clinical dogma. We are urged to lump all the relevant randomised controlled trials into one giant meta-analysis and come out with a combined odds ratio for all decisions. Physicians, surgeons, nurses are doing it; soon even the lawyers will be using evidence based practice. But what if there is no evidence on which to base a clinical decision?*". That was the incipit of a curious and ironic article by David Isaacs and Dominic Fitzgerald issued more than 20 years ago by the British Medical Journal [1]

In their satiric observation, the authors described seven alternatives to *Evidence Based Medicine* (EBM) (Table) when no evidence is available to confront a clinical question or situation. EBM was promoted at McMaster University (Ontario, Canada) as a programme for medical students in 1990 by Gordon Guyatt, the lead author of a landmark article in JAMA, two years later, subsequently cited more than 4500 times [2].

EBM determined a philosophical and intellectual revolution in the practice of modern medicine; while imperfect and with limitations, it has permitted the transition from empiricism to the practice of medicine based on evidence obtained by a rigorous and scientifically oriented method. EBM has been criticized, misunderstood and misused over the years, even though its role and its rules remained evident to those who trusted and appreciated it [3]. In 2014, 22 years after the publication of its JAMA manifesto, Trisha Greenhalgh and others moved a substantial critique to EBM, emphasizing - along with many benefits – the unintended negative consequences and the need for new directions for EBM [4]. The authors reaffirmed the original role of EBM, i.e. refocusing actionable and robust evidence in the appropriate context and with the professional expertise required to optimize individual patient care. They named this process the *Reinassance of EBM*.

In late December 2019, an outbreak of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was identified in Wuhan, China [5]. The outbreak rapidly spread across continents becoming the ongoing pandemic which had caused more than 2.95 million confirmed infections and 205,000 deaths in 185 countries as of April 26$^{th}$ 2020 [6]. The rapidly evolving COVID-19 pandemic determined in less than four months tragic and disruptive consequences, both for individuals and health care systems, in the absence of treatments objectively tested for efficacy. The use of drugs against COVID-19 relied largely on anecdotal reports and underpowered studies with major methodological bias and limitations. The partner in crime was of course the rapidity of viral spread along with the dramatic burden of morbidity and mortality in the general population. In the last three months, the medical literature has been flooded with articles of dubious robustness and undoubtable methodological weakness, some of which found hospitality in distinguished peer-reviewed medical journals. In normal times most of these articles would have been likely rejected outright.

For many of us who "grew up" during the affirmation of EBM, learning from its virtues and vices, the early era of COVID-19 pandemic represented the denial of more than 20 years of its history. After the EBM revolution, the present trend has taken the form of a counterrevolution with unacceptable consequences. Those who care for COVID-19 patients have felt on their skin a sense of skepticism turning to defeat and impotence while treating patients with drugs that seemed more toxic than effective [7], based on inconsistent reports contradicting each other in a matter of weeks [8,9]. Unfortunately, the aphorism by Sir William Osler "*We administer drugs we don't know in a body that we know even less*" never sounded so true! [10]. All that proved to be too much *Emergency*- and *Emotion-Based* and too little *Evidence Based Medicine*.

Many methodologically sound clinical trials are ongoing in order to answer the unmet clinical needs for COVID-19 treatment, duly registered at ClinicalTrials.gov. We are anxiously awaiting those results to fill current gaps in knowledge and improve the delivery of appropriate care to our patients affected by COVID-19. Meanwhile, we must rely on the best of our knowledge, clinical experience and judgement, with a healthy dose of skepticism towards a flourish of "experts" in a disease that was totally unknown only four months ago.

Isaacs and Fitzgerald concluded their report with the comment that there "*are plenty of alternatives for the practicing physician in the absence of evidence and this is what makes medicine an art as well as a science*" [1].

If *Emotionality* and *Emergency* should be the eighth alternative to *Evidence* (Table), we will continue to prefer and promote the original EBM with no alternatives at all, practicing medicine as a science and an art of judicious balance between knowledge and clinical judgement in making decisions about the care of individual patients.

Table 1.

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**Table 1**
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| Basis for clinical decisions | Marker | Measuring device | Unit of measurement |
| Evidence | Randomised controlled trial | Meta-analysis | Odds ratio |
| Eminence* | Radiance of white air | Luminometer | Optical density |
| Vehemence* | Level of stridency | Audiometer | Decibels |
| Eloquence* | Smoothness of tongue | Teflometer | Adhesin score |
| Providence* | Level of religious fervor | Sextant to measure angle of genuflection | International units of piety |
| Diffidence* | Level of gloom | Nihilometer | Sighs |
| Nervousness* | Litigation phobia level | Every conceivable test | Bank balance |
| Confidence* | Bravado | Sweat test | No sweat |
| Emergency and Emotional | Emergency needing of evidence, and wavering of available information | Oscillometer | Degrees of deviation from ultimate evidence |

* Seven alternatives to evidence based medicine originally described in the article by Isaacs and Fitzgerald [1]

## Declaration of Competing Interest

The authors declare that there is no conflict of interest

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