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Letter to the Editor

Which intravascular access should we use in patients with suspected/confirmed COVID-19?



The current SARS-CoV-2 pandemic is challenging the healthcare system around the world. Control of the pandemic is based on isolation, social distancing, the use of personal protective equipment (PPE), as well as testing to detect the virus, which results make it possible to isolate COVID-19 positive patients.

SARS-CoV-2 is predominantly transmitted by contact or droplet transmission. Medical personnel are particularly vulnerable to the risk of SARS-2 infection as well as to the potentially devastating sequelae, including severe pneumonia, ARDS, or even death.¹ More than 100 physicians in Italy have died as a result of COVID-19. The very high number of infections and the routes of viral transmission necessitates medical personnel to use personal protective equipment (PPE), in which appropriate use of PPE significantly reduces the risk of viral transmission.

At the forefront of prevention of the spread of COVID-19 to and from health care workers (HCWs) who had contact with patients with suspected/confirmed SARS-CoV-2, is PPE for aerosol-generating procedures. The use of protective equipment, however, may prove difficult in undertaking medical procedures, including limiting the possibilities of diagnostics, careful physical examination of the patient, and carrying out essential medical procedures. Quick administration of treatment in many cases, however, improves the patient's prognosis, as indicated by numerous studies on patient survival; these studies show higher survival rates in patients treated early with adrenaline, especially in the subset of patients with a

shockable rhythm.² Peripheral prehospital medications are typically administered via the intravenous (PIV) route. Establishing PIV access may be particularly difficult or impossible in patients with a collapsed vascular bed, as is the case with cardiac arrest or hypovolemic shock.

For our analysis, we reviewed the results of articles, including randomized studies comparing the use of intravenous and intraosseous access with the "rescuer" in full protective gear in the following databases: Pubmed, Embase, WebofScience, Cochrane database. The analysis of randomized trials^{3–5} shows that the use of PPE significantly reduces the efficacy of PIV (RR = 1.0; 95% CI, 0.93–1.08; I² = 88%; p = 0.006) and extends the time to obtain access (MD = 9.37; 95% CI, 0.81–17.93; I² = 98%; p < 0.001). Instead, intraosseous access may be used with effectiveness of IO at 100% and higher than for PIV - 89.9% (RR = 1.11; 95% CI, 1.03–1.20; I² = 88%; p = 0.006). The time of vascular access was also statistically different between IO and PIV; in favor of IO (MD = -17.60; 95%CI, -19.44 to -15.76; I² = 99%; p < 0.001; Fig. 1). Further, the use of intraosseous access in comparison with intravenous cannulas may be associated with a lower risk of stabbing, especially when using double gloves by medical personnel.

To summarize, medical personnel dressed in full protective gear as the preferred method of gaining intravascular access in patients with suspected/confirmed COVID-19 should choose intraosseous access.

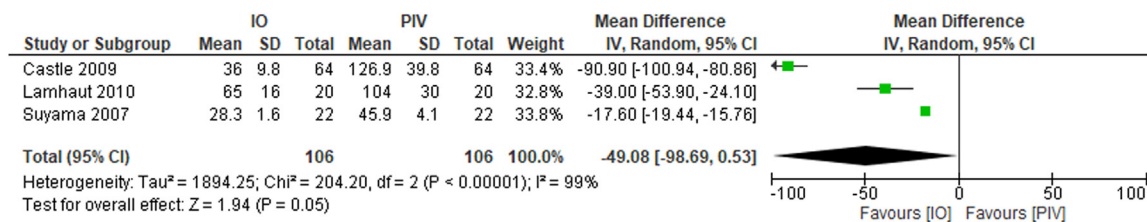


Fig. 1 – Meantime to establish intravascular access during full protective gear wearing.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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