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Letter to the Editor

COVID-19 contagion and contamination through hands of trauma patients: what risks and what precautions?

Sir,

The coronavirus pandemic has required a reorganization of hospital activity in Italy and many other countries. Since the beginning of March 2020 hand and upper limb surgery in our hospital has been limited to trauma cases. Although emergency care unit attendances have decreased considerably in recent weeks, we continue see patients with upper limb trauma, mostly after accidents at home. HCWs have to avoid contagion and contamination by COVID-19. Hands are the most common vehicles for many pathogens, including SARS-CoV-2. As such, one of the most important preventive measures in COVID-19 infection is considered to be good hand hygiene. [1].

Recent literature has focused on hand hygiene of HCWs; [2] hand hygiene of patients is often overlooked. The hands of injured patients are not clean, they are unlikely to have washed their hands immediately before the trauma, they cannot wash them immediately after the trauma, and thereafter they may be constrained by pain, the presence of open wounds, and limitation of movement. It should never be forgotten that where a patient has a unilateral upper limb injury HCWs will have regular contact with the contralateral upper limb (e.g. for venous line insertion). We therefore propose a series of precautionary measures to be followed in order to avoid transmission via the hands of trauma patients. WHO guidelines promote a six-step technique by applying alcohol-based handrub (ABHR), [3] but this cannot apply to patients with upper limb injuries.

Trauma patients have to be subjected to decontamination of the hands as soon as possible, ideally even before they arrive in the emergency department. If decontamination cannot be performed immediately because of the pain, we suggest covering the limb and postponing procedures (if clinically safe to do so) until hands can be decontaminated. If a patient cannot use ABHR themselves, we recommend that both hands should be considered as inanimate surfaces, and cleaned as such. In this setting we use a cleansing biocide pack with a gauze pad soaked in sodium hypochlorite 0.1%, hydrogen peroxide 0.5% or ethanol 62–71% for a minimum of 1 minute, according to Kampf *et al.* [4]. Friction is encouraged. Additional packing for at least

2 minutes with hydrogen peroxide wipes, followed by washing with at least 1 L of 0.9% saline solution, is used on exposed fractures or dirty wounds to reduce the possibility of bacterial contamination. [5].

This procedure should not be overlooked even if a patient needs to undergo urgent surgery. Once in the operating room skin preparation is performed using the usual disinfection: a solution of chlorhexidine gluconate 20 mg/ml and isopropyl alcohol 0,70 ml/ml (ChloraPrep™), or povidone iodine 10% in case of open wounds. [6].

Post-operatively, if injuries are proximal to the hands ABHR use is not contraindicated; however impairment of the upper limbs makes hand hygiene unsatisfactory. Accordingly, biocide packing is performed on both hands. In the case of small very distal injuries to one hand (e.g. fingertip injuries or nail trauma of less than three fingers), ABHR can be performed, but is not completely reliable. Hence we also recommend applying biocide packing on the injured site. In cases of multiple distal injuries in one hand, wounds and soft tissue damage, exposed fractures (including limbs for replantation), burns, and animal bites, we recommend flushing with water (0.9% saline solution), then apply biocide packing for several minutes. Finally, the hands of an unconscious or non-cooperating patient are considered as inanimate objects, and biocide packing is applied.

Given the seriousness of the COVID-19 pandemic, it is important that HCWs follow WHO guidelines. However, these guidelines are generic, and may not address risks that are unique to individual specialties. We present here our approach to the challenge of maintaining hand hygiene in patients with upper limb injuries, which we hope will be of value to others internationally.

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Conflicts of Interest

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