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Letter to the Editor

Do stampers cross-transmit bacteria when used on human skin for controlling entry? Implications for the safe application of stampers during the COVID-19 pandemic



Sir,

The coronavirus disease 2019 (COVID-19) pandemic in 2020 has had a major impact worldwide. Strategies and actions to prevent the transmission of severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) in hospitals and communities are critical. Stamping the human body (mainly hands or forearms) as a marker for approved repeated entrance into a building (e.g. museum, recreational area, theme park) for 1 day is common. Hospitals in Taiwan also apply this method for entrance control [1].

One key step for a hospital to prevent the potential spread of COVID-19 is screening at hospital entrances, including body temperature monitoring, symptom assessment and checks of COVID-19 risk histories including travel, occupation, contact with infected cases and clustering of cases (TOCC). Due to the large number of medical services performed in a hospital each day, risk screening measures at hospital entrances led to long queues along walkways outside hospitals, which resulted in inconvenience for patients and was time consuming for hospital staff. In addition, for those individuals who had already been screened at the hospital entrance, repeat screening was needed if they left the hospital and wanted to re-enter. To facilitate re-entry for these individuals on the same day, stamping on the hands or forearms was implemented once the individual had gone through the screening procedure. This method decreased crowding at hospital entrances and was convenient for patients and visitors; as such, stamping was widely adopted by hospitals in Taiwan.

However, stamping raised concerns, such as smudged clothing, blurred stamping, skin allergies and contamination due to repeated use of stampers, which may lead to transmission of pathogens from one person to another. Although stamping people may be considered a potential source of transmission through a fomite, it is not known whether the stampers carry micro-organisms. As such, the authors performed a bacterial culture surveillance to determine the

bacterial burden on the stampers to clarify the safety of using stampers on human skin during the COVID-19 pandemic.

Micro-organisms on the contact surfaces of the stampers were evaluated in April 2020 at the 16 TOCC assessment points of a 1700-bed medical centre in Taiwan. Stampers were collected for culture at three time points: 09.00 h (T1), 12.00 h (T2) and 16.00 h (T3). At each time point, stampers were collected before (A) and after (B) contact with human hands. In total, 96 samples were collected. A moistened swab was used to collect bacteria from the surfaces of stampers. The swab was inoculated in tryptic soy agar (Creative Microbiologicals, Ltd) and cultured at 35°C for 48 h. Microbial burden was presented as aerobic colony counts. Bacterial identification was identified using Gram stain and matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (Bruker, Billerica, MA, USA). The colony counts of the 16 stampers at different time points are shown in Table 1. No significant differences in colony counts were found between the three time points. Further identification of colony strains showed that *Bacillus* spp. were predominant, and only two *Staphylococcus* spp. were identified: *Staphylococcus aureus* and *Staphylococcus haemolyticus*.

With regard to the concern that bacteria on the stampers can be a potential source of fomite transmission, these results revealed that most bacteria were *Bacillus* spp., which are generally considered to be environmental organisms. Only two

Table 1
Total colony counts at different time points

Stamper #	T1	T2	T3	Stamper #	T1	T2	T3
1-B	1	1	0	9-B	1	0	0
1-A	0	0	0	9-A	1	0	0
2-B	1	0	0	10-B	1	2	2
2-A	1	0	0	10-A	0	0	0
3-B	0	0	2	11-B	1	2	0
3-A	4	0	2	11-A	1	2	2
4-B	0	1	1	12-B	2	0	0
4-A	1	0	0	12-A	1	0	0
5-B	0	0	1	13-B	0	0	0
5-A	1	0	1	13-A	0	0	1
6-B	2	0	0	14-B	1	0	0
6-A	2	0	0	14-A	1	1	0
7-B	3	0	1	15-B	2	2	1
7-A	0	0	1	15-A	2	1	1
8-B	1	2	1	16-B	0	1	1
8-A	2	1	0	16-A	0	2	3

Staphylococcus spp. isolates were identified. One possible explanation is the relatively small surface area of the stamper that touches the skin. Larger contacting surfaces could potentially accrue more micro-organisms [2]. Another explanation is that the components of the ink (i.e. dye, alcohol, surfactant) may exert an antibacterial effect [3].

The culture results showed no significant bacterial pathogens from repeated stamper use, with human skin serving as a good first-line barrier to micro-organism insults [4]. SARS-CoV-2 is a capsulated virus which is highly likely to be susceptible to the components of the ink; as such, it is considered that stampers are unlikely to represent a potential source of fomite transmission. These results show that the use of stampers is safe with regard to bacterial contamination, and suggest that they can be used for entrance control during the COVID-19 pandemic period.

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Conflict of interest statement

None declared.

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