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1. Mahase E. Covid-19: WHO declares pandemic because of "alarming levels" of spread, severity, and inaction. *BMJ*. 2020;368:m1036.

2. Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med*. 2020;382:727-733.

A Protection Tent for Airway Management in Patients With COVID-19 Infection



To the Editor:

Airway management is clinically challenging. Along with a proper environment and the use of personal protection equipment, several modules have been proposed to enhance safety during advanced airway management for patients with coronavirus disease 2019 infection.^{1,2} The process of intubation is a high-risk period for aerosol-based transmission, especially when clinicians are in close proximity to the patient's airway.^{3,4} We therefore developed a novel, low-cost, easy-to-make protection tent to provide a protective barrier between clinicians and the patient, containing possible aerosol during intubation.

The concept of the protection tent was inspired by an umbrella and a raincoat. The tent consists of 2 components, including the frames and film (Figure, A). We used 2 L-shaped, solid-iron frames as a skeleton, set along

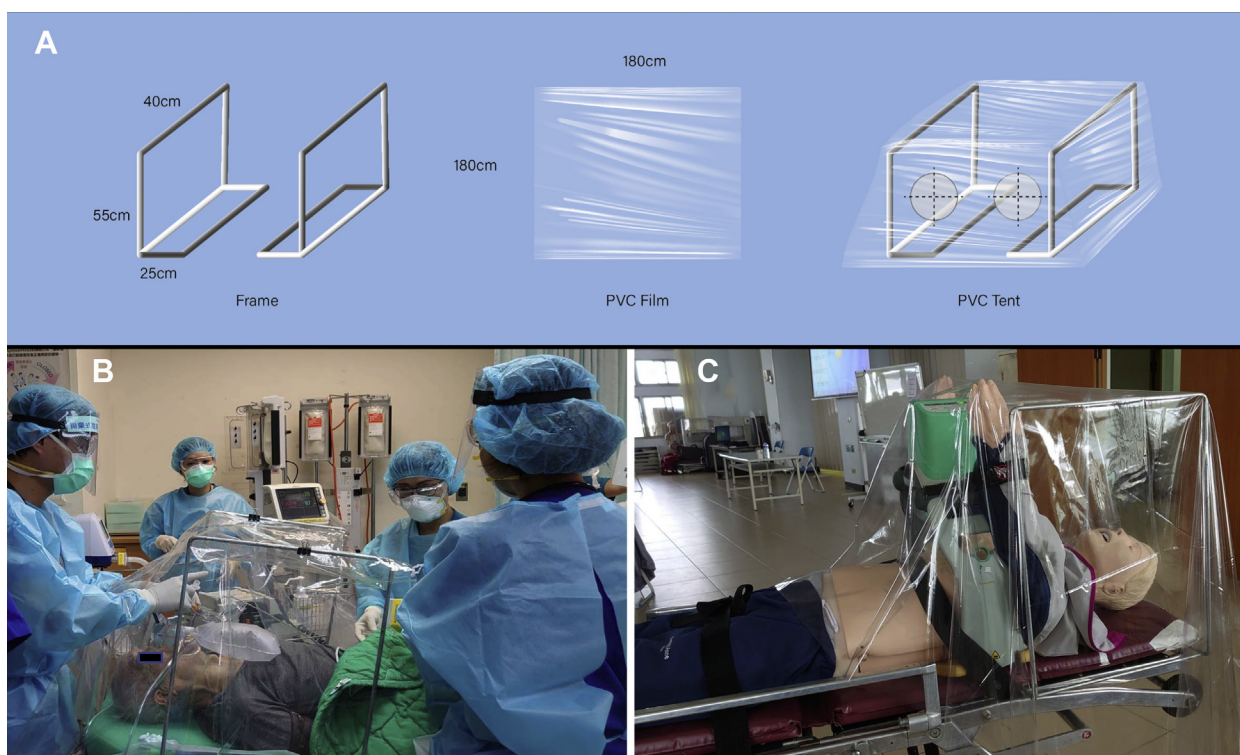


Figure. A, The tent consists of the frames and film. Compared with rigid hoods, the tent provides a more flexible and expansible space, allowing clinicians to operate video laryngoscopes (B). The tent can be an accessory for mechanical resuscitation devices (C).

both sides of the patient's head and upper chest. The frames were covered with a transparent, plastic film, which was made of polyvinyl chloride, as a tent. Scissors were used to cut the film to create holes as necessary, allowing physicians and nurses to put their hands through the holes and perform procedures.

The tent has several advantages. First, it is inexpensive and easy to make, with a cost of only \$20. The materials for the frames and film are easily accessible in most areas. The film is disposable, and the frame is reusable after being sanitized with 70% ethyl alcohol or 0.5% sodium hypochlorite.⁵

Second, compared with rigid hoods or chambers, the tent provides a more flexible and expansible space and thus allows clinicians to operate various types of intubation equipment, such as video laryngoscopes (Figure, B).

Third, the tent is stable, lightweight, and easy to assemble, which makes it applicable in out-of-hospital settings. It can also be an accessory for mechanical resuscitation devices, even on stretchers (Figure, C).

In the fight against emerging infectious diseases, this newly designed tent can give physicians and nurses a much safer environment during airway management.

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1. Resuscitation Council. Resuscitation Council UK statement on COVID-19 in relation to CPR and resuscitation in healthcare settings. Available at: <https://www.resus.org.uk/media/statements/resuscitation-council-uk-statements-on-covid-19-coronavirus-cpr-and-resuscitation/covid-healthcare/>. Accessed March 20, 2020.
2. Zuo MZ, Huang YG, Ma WH, et al. Expert recommendations for tracheal intubation in critically ill patients with novel coronavirus disease 2019. *Chin Med Sci J*. <https://doi.org/10.24920/003724>.
3. Tran K, Cimon K, Severn M, et al. Aerosol generating procedures and risk of transmission of acute respiratory infections to healthcare workers: a systematic review. *PLoS One*. 2012;7:e35797.
4. Brewster D, Chrimes N, Do T, et al. Consensus statement: Safe Airway Society principles of airway management and tracheal intubation specific to the COVID-19 adult patient group. Available at: <https://www.mja.com.au/journal/2020/consensus-statement-safe-airway-society-principles-airway-management-and-tracheal>. Accessed March 22, 2020.

5. Centers for Disease Control and Prevention. Environmental cleaning and disinfection recommendations: interim recommendations for US households with suspected/confirmed coronavirus disease 2019. Available at: <https://www.cdc.gov/coronavirus/2019-ncov/community/home/cleaning-disinfection.html>. Accessed March 20, 2020.

Lessons From Previous Pandemics: A Toxicology Perspective



To the Editor:

History doesn't repeat itself, but it often rhymes.
—Attributed to Mark Twain

In the 20th century, there were at least 3 influenza pandemics (1918, 1957, and 1968) along with 3 other notable influenza outbreaks (1947, 1976, and 1977). Each occurrence elicited a different approach, although with the onset of modern virology and vaccinations the approach in the latter half of the 20th century centered on these principles. However, it is most interesting to investigate these approaches from a toxicology perspective to properly address certain adverse consequences of intervention and its potential to be repeated.

For example, the treatment of the 1918 to 1919 influenza pandemic often involved high daily doses of salicylates (8 to 32 g/day, which is several times greater than the 4-g maximum daily dose recommended today).¹ Certainly, the development of pulmonary edema or hemorrhage, along with the timing of high-dose salicylate use after the US surgeon general advocated its use in September 1918 (that eventually corresponded with a spike in the death rate after October 1918), can lead one to the conclusion that salicylate toxicity contributed to these deaths.¹

The influenza A (H1N1 “swine flu”) virus outbreak, which had its origins at Fort Dix, NJ, is also illustrative of such consequences. The incidence of Guillain-Barré syndrome associated with the 1976 National Influenza Immunization Program against swine flu found a vaccine-attributable risk of 8.8 cases per million vaccines (a relative risk of 7.6) in the 6 weeks after vaccination.²

At approximately the time of the influenza A/H1N1 (also known as the Russian flu) outbreak in primarily children and adults younger than 23 years, in 1977 to 1978, the Centers for Disease Control and Prevention received 655 reports of Reye's syndrome (encephalopathy and hepatic fatty degeneration), with a 32% fatality rate. This eventually led to the association of Reye's syndrome with pediatric salicylate consumption that actually was studied during the influenza A/Brazil outbreak in Arizona in December 1978.³ According to this study, cases of Reye's syndrome decreased from a peak of 658 cases in 1980 to 93 in 1985.³