

Triage for Harm Reduction under Epidemics of COVID-19

The first patient of the 2019 novel coronavirus disease, COVID-19, was identified in Wuhan, China on December 1, 2019¹ and the outbreak was reported to the WHO Country Office in China on December 31. It was declared a Public Health Emergency of International Concern on January 30, 2020 because cases had been reported in five WHO regions in one month, and human-to-human transmission had occurred outside Wuhan and outside China². On the date of the declaration, there were 7,818 cases confirmed globally, affecting 19 countries. As of March 1, 87,137 confirmed cases and 2,977 deaths had been reported in 59 countries in all six WHO regions³.

A study reviewed the basic reproduction number (R_0) of the COVID-19 virus and found that the estimated mean R_0 before January 2020 seemed around 3.28⁴. Coupled with the asymptomatic carrier transmission⁵, it makes community outbreak inevitable. A recent study on 72,314 COVID-19 patients found that 1.2% of them were asymptomatic. Among 44,672 confirmed cases, there were 80.9% considered mild or moderate and 19.1% severe or critical⁶. It has been postulated that the mortality rates in Wuhan city (>3%) are higher than other regions of Hubei (about 2.9%) or provinces of China (about 0.7%) most likely because of the rapid escalation in the number of infections, which has resulted in an insufficiency of health-care resources⁷. Since all of them may spread the virus, many mild cases were initially hospitalized into ventilated wards with negative pressure mainly for isolation. As most affected countries are entering the phase of community spread, we must seriously consider how to reduce harm by slowing the speed of transmission, preserving the healthcare workforce, and efficiently allocating the limited resources of precious protective equipment, isolation spaces, mechanical ventilation, and wards ventilated with negative pressure. As the epidemic grows bigger, most of these resources will be in short supply, which could aggravate both the case incidence and mortality, as well as the country/region's economy.

By good preparation of triage and home isolation and care, we may minimize nosocomial infection and conserve the medical workforce and resources for severe and critical cases. The following suggestions may be considered and implemented as early as possible: (1) Triage all patients outside of any hospital or confined space. Restrict access

of direct healthcare and professionals to only patients with fever and/or respiratory symptoms. Every healthcare organization and/or public health agency must provide real time telehealth consultation services to minimize any direct person-to-person contact before seeking healthcare services. In fact, we hope to establish 100 fever screening stations next to hospitals and more telehealth consultation services throughout Taiwan to minimize nosocomial infections and protect community people. (2) Triage resource-intensive services such as tests for Covid-19 infection, negative pressure wards, mechanical ventilation, etc. from those that only require close observation and provide 24-hour real time consultation through cell phones and/or related telecommunication services. The design of triage routes and isolation of patients with different needs combined with comprehensive disinfection procedures would reduce cross contamination among patients and healthcare personnel. (3) Reserve mechanical ventilation and negative pressure wards only for the most severe patients with adult respiratory distress syndrome.

2 In the phase of community spread, we suggest that the symptomatic cases should be triaged first outside of hospital or through a separate route to avoid or minimize nosocomial infection. Mild confirmed cases may be placed in a nearby isolated shelter with adequate care professionals who have personal protective equipment and who are capable of adhering to good respiratory etiquette and hand hygiene. This would allow for mild cases to be quickly hospitalized, where they would receive more advanced services in case of aggravation (e.g., difficulty breathing) or emergency. We should provide real time consultation and medical services to both symptomatic and asymptomatic cases and carefully monitor their clinical courses, which could be accomplished by using information communicating Apps for smart phones among patients, caregivers, medical staff, and the local health department.

Chen-Long Wu

Department of Occupational and Environmental Medicine,
National Cheng Kung University Hospital, College of Medicine,
National Cheng Kung University, Taiwan

Jung-Der Wang

Department of Public Health, College of Medicine,
National Cheng Kung University, Tainan, Taiwan.

E-mail: jdwang121@gmail.com

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