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### Coronavirus Disease 2019 and Transplantation: a view from the inside

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Since December 2019, world healthcare community faced with Coronavirus Disease 2019 (COVID-19) outbreak caused by SARS-CoV-2. Due to the high viral contagiousness and the possible transmission during the pre-symptomatic phase, COVID-19 progressively spread to several countries. Currently, Italy is the third Country for number of confirmed cases after mainland China and South Korea, and the first western nation with a well-established deceased transplant program to tackle a COVID-19 outbreak<sup>1</sup>.

Italian Transplant Authority (Centro Nazionale Trapianti) promptly released guidelines on donor management. Nasopharyngeal swab (NPS) or bronchoalveolar lavage are suggested to identify COVID-19 before donation in highly epidemic areas of the Country, with the consequent exclusion of positive donors. Conversely, no specific indications for recipients from and for Transplant Centers within epidemic areas are available<sup>2</sup>.

Our Hospital, located in Milan, northern Italy, hosts a liver, lung, kidney and bone marrow transplant Centre. In addition, our intensive care unit is the regional referral center for severe COVID-19, and was recently readapted to create a dedicated facility. From the beginning of COVID-19 outbreak in Italy, in our Hospital several preventive measures were implemented such as: i) personnel training and application of infection control measures (hand hygiene, facial mask and gloves for healthcare professionals assisting transplant patients, a dedicated pathway in Emergency Department for suspected cases), ii) limitation of surgical activities, iii) screening with NPS and pre-emptive isolation of possibly exposed subjects<sup>3</sup>.

As transplant and infectious disease specialists, we deem it is crucial to carefully balance cost and benefits in performing a transplant within a COVID-19 epidemic region/during a COVID-19 outbreak. Michaels and colleagues recently well described possible risks associated to transplant in COVID-19 positive recipients.<sup>4</sup> While patients in the waiting list need transplantation to solve their primary disease, post-transplant patients carry high risk of severe infections with possible fatal outcomes. Furthermore, healthcare professionals and the other close contacts (in both intensive care unit and ward) may develop symptomatic COVID-19 and could spread the infection both inside and outside hospitals.

Moving from these considerations, we created a dedicated pathway for liver transplantation (LT) during COVID-19 outbreak (Figure 1). Briefly, due to the unknown viral kinetic and the possibility of false negative results described for NPS<sup>5</sup>, we limit LT to the most urgent cases of patients living in the epidemic area, while consider a more liberal allocation for patients outside epidemic areas. However, all recipients are screened to avoid transplantation in SARS-CoV-2 positive subjects. The waiting list is daily reviewed and recipients living

inside the up-to-dated epidemic zones. Consistently, our procedure is to be reviewed every two weeks by an internal board according to the new insights on COVID-19.

We strongly agree with Michaels and colleagues that all efforts must be carried out to control COVID-19 spread and avoid post-transplant infections, especially during the initial phase of the outbreak. As epidemic evolves, our attitude towards transplantation will be reviewed and our procedure updated. Prompt information should be given to patients and caregivers to avoid panic and misleading situations. Yet, facing the outbreak from inside we cannot afford any underestimation.

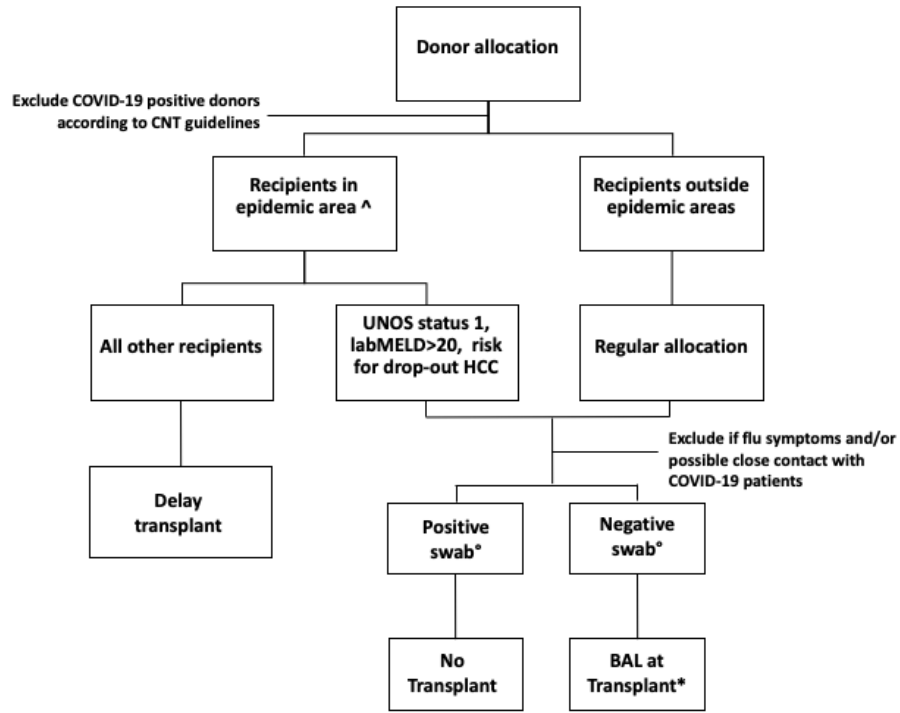
#### Disclosure

The authors of this manuscript have no conflicts of interest to disclose as described by the *American Journal of Transplantation*.

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**Figure 1.** Flow-chart describing the decisional pathway for organ allocation within our liver Transplant Centre during COVID-19 outbreak. ^, consider a back-up recipient; °, a prioritized analytical pathway has been established to obtain the result within 6 hours; \*, If BAL positive (time-to-result 6 hours), patients are isolated in dedicated rooms, healthcare workers defined as close contacts perform NPS and undergo home quarantine while awaiting the results; CNT, Centro Nazionale Trapianti.



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