Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Organ procurement and transplantation in Germany during the COVID-19 pandemic

The COVID-19 pandemic has introduced unique challenges to health-care systems worldwide. Organ procurement and transplantation activities were affected in this context as previously described by Alexandre Loupy and colleagues.[1]

However, COVID-19 and organ transplant data from Germany,[2] the Robert Koch Institute, and Eurotransplant paints a different picture. With the increase in the number of COVID-19 cases, organ procurement and transplantation activities in Germany remained robust (appendix).[2] Moreover, compared with the previous year, the cumulative numbers of deceased organ donors and transplants show no significant reduction. Kidney transplantation numbers were stable, while the numbers of heart, lung, and liver transplantations from deceased donors even increased from January to April, 2020, when compared with the same period of the previous year. In contrast, transplant activities in Italy and Spain were reduced by 30–50%.[2]

We believe that this stability is highly related to adequate intensive care resources and largely benefits from the prophylactic measures and control strategy against COVID-19 in Germany. Elective surgeries were postponed or reduced. Therefore, the intensive care and ventilation resources could be allocated to organ procurement and transplantation during this crisis. In addition, a step-by-step plan and recommendations were applied in the early pandemic with close attention to the development and changes of the epidemic situation. The living donation programmes were only temporarily paused, whereas deceased organ donor transplants were continued throughout Germany. As a treatment to end-stage organ failure, transplantation should be regarded as an emergency treatment that should not be discontinued during a pandemic with a careful risk–benefit assessment.

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See **Online** for appendix

Transplant programmes in areas with high SARS-CoV-2 transmission

APHP-St Antoine-Garo/Phanie/Science Photo Library

We read Alexandre Loupy and colleagues' account of a significant reduction in transplant activity in France and the USA with interest.[1] The UK also has a high burden of COVID-19 with high severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission leading to a significant reduction in organ donation and transplant activity. In the UK, in April, 2020, only five out of 23 kidney transplant centres were active during lockdown.[2] According to NHS Blood and Transplant, on May 8, 2020, deceased-donor organ retrieval was down by 63% and kidney transplantation by 57% compared with 2019.

For more on **NHS Blood and Transplant** see https://www.nhsbt.nhs.uk/

The Oxford Transplant Centre is located in a hospital without an emergency department and is maintained as a COVID-19-free site—any suspected cases are isolated on a designated ward, and if confirmed are rapidly transferred to the main acute hospital. We have made profound system-wide changes to our practice covering donor and recipient selection, hospital logistics, and perioperative management to enable our transplant programme to continue, which are summarised in the appendix (pp 1–2). These changes have been highly effective. Between March 16 and May 12, 2020, we did 38 deceased-donor kidney transplants—27 from donation after brain death and 11 from donation after cardiac death. This compares with 16 kidney-alone transplants

For **Robert Koch Institute COVID-19 data** see https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Fallzahlen.html

For **Eurotransplant statistical data** see https://www.eurotransplant.org/statistics/monthly-statistics/

See **Online** for appendix

for the same period in 2019, a rise secondary to an increase in the number of offers as other transplant centres have closed. Follow-up times for these 38 transplants are 1–58 days; we have at least 7 days of follow-up for 31 cases. Initial results are reported here and summarised in the appendix. Median length of hospital stay was 5 days. 9 (29%) of 31 patients had delayed graft function, defined as any use of postoperative dialysis. All discharged patients are no longer dialysis dependent. During this short-term follow-up period none of these recipients have contracted SARS-CoV-2. Three were readmitted to hospital—one for peritoneal dialysis catheter related peritonitis, and two for management of diabetes.

COVID-19 appears to be more prevalent in the UK haemodialysis population than the UK transplant population (8·6% *vs* 1·1%) with comparable mortality risk (22·5% *vs* 25·1%)—summarised in the appendix (p 5).[3] Our early results support the notion that a continued (albeit radically altered) transplant programme helps minimise pandemic risk in a highly vulnerable population. Soon transplant services might need to coexist with COVID-19 and, much as previous generations did in an earlier era of infectious disease, we will need to learn to segregate patients who are at risk.

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Host or pathogen-related factors in COVID-19 severity?

Lucy Okell and colleagues[1] observed that the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is currently in marked decline in many countries. Okell and colleagues suggest two possible explanations for this decline, namely the effect of lockdowns, physical distancing, and other interventions; or, alternatively, herd immunity. After analysing trends in cumulative deaths over time in many European countries that went into lockdown at different stages of their epidemic, and data obtained from serology studies on the proportion of the population that had the infection previously, Okell and colleagues found few data to support an explanation that relies on herd immunity.

In the first explanation, there is a high risk of renewed transmission if interventions or behavioural modifications are relaxed. In the explanation regarding herd immunity, further declines in cases and deaths are to be expected even in the absence of interventions or behavioural modifications. We support Okell and colleagues for stating that identifying the most probable explanation is key to any future plans to lift physical distancing and travel restrictions. However, we would like to suggest a third explanation linked to changes in the pathogen, and hence in disease severity.

SARS-CoV-2 has mutated.[2,3] This observation coincides with reports of a lower disease severity (measured in the number of days with symptoms and degree of pneumonia severity) in newer patients compared with those who contracted the disease earlier.[4] If changes in population susceptibility or pathogen virulence are associated with a decline in disease severity, then less aggressive control interventions will be enough for future COVID-19 management.

We encourage future epidemiological studies to include indicators of disease severity as predictor variables. Analyses that do not account for host-related or pathogen-related changes in disease severity should be interpreted with caution.

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