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thorax CT were completed to identify asymptomatic infection (step 3). Patients who were wait-listed and very sick, based on United Kingdom Model for End-Stage Liver Disease (UKELD) criteria, advanced tumours, or variant syndromes with higher mortality, were identified as priority recipients. (step 4). Postoperatively, all patients were managed in a clean ICU and post-transplant ward and treated with standard triple immunosuppression regimen. The paediatric liver transplant programme has continued at reduced capacity throughout the pandemic, since SARS-CoV-2 was less prevalent in the paediatric population and there was adequate ICU capacity, and therefore a lower risk of nosocomial infection.

Using this stepwise approach, between April 13 and May 17, 2020, we did 17 liver transplants. The first was an extremely urgent (category 1) transplant for acute liver failure. The patient recovered without complication, discharged on postoperative day 7. With declining ICU occupancy, a collaborative decision across all UK liver transplant centres was made to resume transplantation for wait-listed patients with highest priority. On May 11, 2020, routine activity resumed and adult transplant activity has returned to the pre-pandemic median. As of May 17, 2020, we have transplanted 14 adult patients with a UKELD ranging from 51–70, including one late re-transplant. The mean ICU stay was 2.7 days (range 1–9) and total hospital stay 11 days (range 6–24 days), with 12 (86%) of 14 patients (85%) safely discharged home thus far. Rapid screening of potential recipients resulted in one cancellation when a proposed asymptomatic recipient was found to have ground glass opacification on screening CT of the thorax, but the nasopharyngeal SARS-CoV-2 RNA RT-PCR swab was negative. At the time of writing on May 28, 2020, there have been no cases of nosocomial SARS-CoV-2 infection in the patients who have undergone liver transplantation in our unit.

Prolonged suspension of solid organ transplant programmes will create disequilibrium within the transplant waiting list and prevent access to life-saving treatment. The number of UK wait-listed patients exceeds the number of transplants by 30% and the organ shortfall is likely to increase after the COVID-19 pandemic. Using all acceptable grafts is important to avoid excessive waiting time and associated mortality. While the adult liver transplantation service was suspended, some whole liver grafts were diverted to the paediatric centre for transplant into suitably size-matched older children.

Minimisation of the cold ischaemia time of liver allografts is vital for successful transplantation. Logistical arrangements for liver transplantation therefore must follow strict timelines. Uncertain ICU bed availability and the implementation of SARS-CoV-2 screening before surgery proved to be logistically challenging. Normothermic machine perfusion was used in two instances to overcome these challenges and allow extended graft preservation times. During this period, we transplanted one graft preserved for 19 h using this method; the recipient recovered without complication.

Thus far, 2020 has presented many new challenges to health-care systems and clinicians. It is now important for health services to learn from the recent month's events, enabling a more prepared response in anticipation of further COVID-19 surges or the emergence of another pathogen.

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## Colorectal cancer screening in the USA in the wake of COVID-19

In the past two decades, we have made strides to boost colorectal cancer screening in the USA, with screening rates increased to 67% of eligible individuals.<sup>1</sup> Current efforts are directed towards boosting screening rates to 80%.

As a result of the COVID-19 pandemic, primary care visits have decreased substantially, and non-urgent and elective procedures are delayed. Subsequently, in March, 2020, the American Cancer Society recommended that no-one should go to a health-care facility for routine (non-diagnostic) cancer screening until further notification, which restricts the ability to screen average-risk individuals for colorectal cancer using colonoscopy or sigmoidoscopy. As a result, screening efforts have largely been suspended and screening

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rates have plummeted by 86% relative to the average before January, 2020.<sup>2</sup>

The USA is not unique in the sharp decrease in colorectal cancer screening; other high-income countries have also reported largely halting their colorectal cancer screening efforts. However, this is where the stories diverge. The USA is an outlier among high-income countries in a couple of ways. First, with a few exceptions, the USA does not have national, regional, or local organised programmes for colorectal cancer screening. Colorectal cancer screening is largely opportunistic—ie, requires a provider visit. Second, colonoscopy is the predominant method of screening, as opposed to tests, such as the faecal immunochemical test (FIT).

As we prepare for resumption of clinical services, we must meaningfully address the disparities in delivery and methods of colorectal cancer screening compared with other countries. Health-care systems and health service users should implement an organised, vigorous screening approach, by which we identify those eligible for colorectal cancer screening and reach out to them individually. Models for this approach already exist<sup>3</sup> and have been successful in achieving screening rates of 80% and higher. These approaches can be tailored for the specific population's needs and are also cost-effective.<sup>4</sup> Given that the USA is a patchwork of health-care systems and networks, the first step in this effort is to create local, regional, or statewide registries of

individuals eligible for colorectal cancer screening. This endeavour will take enormous upfront effort and public cooperation between providers, non-profit organisations, and governments, but the dividends go far beyond one-time screening: these registries could evolve into living documents accessible by all health-care providers, similar to vaccination registries. In the long-term, this approach would also reduce overscreening.

The second crucial aspect to address is flexibility in screening methods. As the COVID-19 pandemic shows, activities that are difficult or inconvenient to do in person can still be done at home. Zoom (Zoom Video Communications, San Francisco, CA, USA) and other video conferencing platforms have been substitutes for unsafe in-person meetings. FIT-like tests have high sensitivity and specificity for detecting colorectal cancer<sup>5</sup> and can be sent directly to patients, done in the safety of their homes, and posted back to the laboratory. With positivity rates of 4–8%, this approach would substantially reduce the number of individuals who must go through the trying task of scheduling and undergoing a colonoscopy, made even more risky by potential exposure to SARS-CoV-2. Approximately 88 million individuals are aged 50–75 years in the USA, at least 29 million of whom were not up to date with their colorectal cancer screening before March, 2020. With screening decreasing by 86%,

FIT-like tests could offer a method of triaging this increasing backlog.

In the USA we have adapted to newer models of doing business, delivery of education, and health care since the pandemic began. The approaches we suggest here are safe, low cost, readily available, evidence based, and in keeping with guidelines for physical distancing. We believe that organised screening and FIT-like tests are the best path forward for colorectal cancer screening in the wake of COVID-19.

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