



# Prevention and Management of Donor-transmitted Cancer After Liver Transplantation: Guidelines From the ILTS-SETH Consensus Conference

Beatriz Domínguez-Gil, MD, PhD,<sup>1</sup> Kerstin Moench, MD,<sup>2</sup> Christopher Watson, MD,<sup>3</sup> M. Trinidad Serrano, MD,<sup>4</sup> Taizo Hibi, MD, PhD, FACS,<sup>5</sup> José M. Asencio, MD, PhD, FACS,<sup>6</sup> Marieke Van Rosmalen, MD,<sup>7</sup> Olivier Detry, MD, PhD,<sup>8</sup> Julie Heimbach, MD,<sup>9</sup> and François Durand, MD<sup>10</sup>

**Abstract.** As with any other intervention in health, liver transplantation (LT) entails a variety of risks, including donor-transmitted cancers (DTCs). At present, 2%–4% of used deceased organ donors are known to have a current or past history of malignancy. The frequency of DTCs is consistently reported at 3–6 cases per 10000 solid organ transplants, with a similar frequency in the LT setting. A majority of DTCs are occult cancers unknown in the donor at the time of transplantation. Most DTCs are diagnosed within 2 y after LT and are associated with a 51% probability of survival at 2 y following diagnosis. The probability of death is greatest for DTCs that have already metastasized at the time of diagnosis. The International Liver Transplantation Society-Sociedad Española de Trasplante Hepático working group on DTC has provided guidance on how to minimize the occurrence of DTCs while avoiding the unnecessary loss of livers for transplantation both in deceased and living donor LT. The group endorses the Council of Europe classification of risk of transmission of cancer from donor to recipient (minimal, low to intermediate, high, and unacceptable), classifies a range of malignancies in the liver donor into these 4 categories, and recommends when to consider LT, mindful of the risk of DTCs, and the clinical condition of patients on the waiting list. We further provide recommendations to professionals who identify DTC events, stressing the need to immediately alert all stakeholders concerned, so a coordinated investigation and management can be initiated; decisions on retransplantation should be made on a case-by-case basis with a multidisciplinary approach.

(*Transplantation* 2022;106: e12–e29).

## INTRODUCTION

Liver transplantation (LT) has altered the natural history of end-stage liver disease and is now the most effective therapy for a number of acute and chronic liver diseases. In 2019, 35784 liver transplants were reported by 70 countries to the Global Observatory on Donation and Transplantation.<sup>1</sup> LT provides benefits in terms of lifespan and quality of life.<sup>2,3</sup> As with any other intervention in health, LT entails a variety of risks, including the transmission of diseases from donor to recipient.

Donor-transmitted cancers (DTCs) must be differentiated from donor-derived cancers (DDCs). In DTC, the

cancer is present in the graft at the moment of transplantation, whereas in DDC, the cancer is not present in the graft at transplantation but develops from transplanted donor cells thereafter (eg, a hepatocarcinoma in a liver graft several years after the transplant). Although the first implies a risk shared among all recipients of organs from the same donor, this is not the case in DDCs. Though conceptually different, the distinction between the 2 may be challenging in daily practice. In this article, we focus on DTC.

The frequency of DTC is reported to be low in solid organ transplantation. This frequency may increase as donor age expands. The need to expand the donor pool

Received 29 June 2021. Revision received 30 September 2021.

Accepted 19 October 2021.

<sup>1</sup> Organización Nacional de Trasplantes, Madrid, Spain.

<sup>2</sup> Donor Transplant Coordination Unit, Westfalz-Klinikum, Kaiserslautern, Germany.

<sup>3</sup> The Roy Calne Transplant Unit and Department of Surgery, University of Cambridge, Cambridge, United Kingdom.

<sup>4</sup> Hepatology Section, Hospital Clínico Universitario Lozano Blesa, Zaragoza, Spain.

<sup>5</sup> Department of Pediatric Surgery and Transplantation, Kumamoto University Graduate School of Medical Sciences, Kumamoto, Japan.

<sup>6</sup> Liver Transplant Unit, Hospital General Universitario Gregorio Marañón, Madrid, Spain.

<sup>7</sup> Eurotransplant, Leiden, The Netherlands.

<sup>8</sup> Department of Abdominal Surgery and Transplantation, Centre Hospitalier Universitaire de Liege, University of Liege, Liege, Belgium.

<sup>9</sup> Liver Transplantation Unit, Mayo Clinic, Rochester, MN.

<sup>10</sup> Hepatology Department, Liver Intensive Care Unit, Hospital Beaujon, Clichy, France.

All authors contributed to research design, performance of research, data analysis, and writing of the article. B.D.-G., F.D., K.M., and C.W. performed a critical review of the article. All authors approved the final version of the article.

The authors declare no funding or conflicts of interest.

Correspondence: Beatriz Domínguez-Gil, MD, PhD, Organización Nacional de Trasplantes, C/ Sinesio Delgado 6, Pabellón 3, Madrid 28029, Spain. (bdominguez@sanidad.gob.es).

Copyright © 2021 Wolters Kluwer Health, Inc. All rights reserved.

ISSN: 0041-1337/20/1061-e12

DOI: 10.1097/TP.0000000000003995