SARAH SAGANES | Liver Transplant Recipient

“I woke up feeling like a new person.” — Sarah Saganes, 27, Lakewood, Ohio. Sarah was diagnosed with Caroli disease, a rare inherited disorder of the bile ducts that caused her to battle exhaustion, itching, abdominal pain and severe malnutrition, resulting in her weight dropping to 80 pounds. After undergoing a split liver transplant, Sarah, who is a patient service representative, says she is better able to empathize with patients and encourage them to hope for healing.
2011 Highlights

In 2011, we performed 122 liver transplants, with improved outcomes and survival rates. Our liver transplant program is the largest in the region, finishing in the top 10 for volume in the United States.

We completed our first adult liver transplant on Nov. 8, 1984. Since then, we have completed more than 1,692 liver transplants, including the first lung-liver transplant in Ohio, performed in 2007. Wait-list deaths at six and 12 months have been below regional and national norms. Moreover, our program maintains graft and patient survival above the national averages.

2011 was a year of continued growth and adjustment for the hepatology team as we experienced an increased demand for our services and changes in staff. A total of 462 patients underwent liver transplant evaluation, and 184 patients were listed for transplantation.

The multidisciplinary Liver Tumor Clinic, under the direction of Federico Aucejo, MD, continues to offer state-of-the-art medical care to patients with hepatic tumors through a multidisciplinary team of experienced healthcare professionals in the fields of hepatic surgery, hepatology, radiology and oncology.

The Liver Tumor Clinic enables patients, within a single visit, to be seen by a board-certified hepatologist, oncologist, surgeon and interventional radiologist. During 2011, the Liver Tumor Clinic reported the following activity:

- 995 visits
- 565 total patients
- 259 new patients, with 153 internally referred, 86 externally referred and 20 self-referred

With the large number of patients on the waiting list for liver transplantation and the relative scarcity of organs for transplantation, liver transplant programs have focused on the use of organs from donors who were once considered not suitable/high-risk as “expanded criteria donors.” One group of these donors is non-heart-beating donors (donation after cardiac death, or DCD), who are not brain-dead, as donation occurs after the withdrawal of support and complete arrest of the cardiac and circulatory system. One of the main complications following use of the liver from these donors is biliary strictures, which are thought to be secondary to formation of thrombi in the peribiliary vascular system at the time of lack of perfusion of the organs. Under a new center protocol to lower the risk of ischemic-type biliary stricture after DCD transplant, we have injected tissue plasminogen...
activator into the donor hepatic artery on the back table. Our initial results show patient and graft survival rates comparable to those with livers from standard brain-dead donors.

**Awards and Achievements**

- Cristiano Quintini, MD, received a $25,000 grant for research on normothermic ex vivo perfusion of the liver in collaboration with University Hospitals’ transplant program.
- Charles Miller, MD, was elected Secretary of the American Society of Transplant Surgeons (ASTS) Council.
- Bijan Eghtesad, MD, was appointed Fellowship Director, American Society of Transplant Surgeons.
- Srinivasan Dasarathy, MD, is the recipient of an NIH RO1 award for the study of sarcopenia in cirrhosis.
- Charles Winans, MD, was awarded the 2011 Nightingale Physician Collaboration Nursing Award.
- Nizar Zein, MD, was awarded the 2011 Ana G. Mendez University System Presidential Medal.

**Survival analysis**: For patients receiving their first transplant of this type between July 1, 2008, and Dec. 31, 2010, for the one-month and one-year models, and between Jan. 1, 2006, and June 30, 2008, for the three-year model. Single-organ transplants only; re-transplants excluded.

(Source: Scientific Registry of Transplant Recipients [SRTR], January 2012)

**Adult survival**

<table>
<thead>
<tr>
<th></th>
<th>1 Month</th>
<th>1 Year</th>
<th>3 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient survival (%)</td>
<td>96.6</td>
<td>89.0</td>
<td>82.9</td>
</tr>
<tr>
<td>Graft survival (%)</td>
<td>94.8</td>
<td>87.0</td>
<td>77.2</td>
</tr>
</tbody>
</table>

**Pediatric survival**

<table>
<thead>
<tr>
<th></th>
<th>1 Month</th>
<th>1 Year</th>
<th>3 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient survival (%)</td>
<td>90.9</td>
<td>90.9</td>
<td>100.0</td>
</tr>
<tr>
<td>Graft survival (%)</td>
<td>83.3</td>
<td>83.3</td>
<td>100.0</td>
</tr>
</tbody>
</table>
### Number of liver transplants in 2011

<table>
<thead>
<tr>
<th>Organ</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver</td>
<td>117</td>
</tr>
<tr>
<td>Liver/kidney</td>
<td>4</td>
</tr>
<tr>
<td>Liver/heart</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>122&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup> Includes 7 re-transplants

### Types of liver transplants in 2011

<table>
<thead>
<tr>
<th></th>
<th>Number&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole</td>
<td>111</td>
<td>91.0</td>
</tr>
<tr>
<td>Split</td>
<td>10</td>
<td>8.2</td>
</tr>
<tr>
<td>Reduced/partial</td>
<td>1</td>
<td>0.8</td>
</tr>
</tbody>
</table>

<sup>a</sup> All from deceased donors

### Liver transplant mortality in 2011

| Hospital deaths only (within 30 days post-transplant) | 1 |

### Days on waiting list and post-transplant length of stay (LOS) for liver transplant recipients in 2011

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days waiting</td>
<td>166.4</td>
<td>67.5</td>
<td>122</td>
</tr>
<tr>
<td>Post-transplant LOS</td>
<td>13.2</td>
<td>10.0</td>
<td>119&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>a</sup> 1 patient died during initial hospitalization, and 2 patients were re-transplanted during initial hospitalization, in which cases only the second graft was used to calculate post-transplant LOS
### Median time to liver transplant for patients on waiting list

<table>
<thead>
<tr>
<th></th>
<th>Months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleveland Clinic</td>
<td>6.8</td>
</tr>
<tr>
<td>United States (overall)</td>
<td>11.8</td>
</tr>
</tbody>
</table>

*For patients registered on waiting list between July 1, 2005, and Dec. 31, 2010. Source for U.S. data is Scientific Registry of Transplant Recipients (SRTR).*

### Primary diagnoses for liver patients transplanted in 2011

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatoma, hepatocellular carcinoma</td>
<td>28</td>
<td>22.9</td>
</tr>
<tr>
<td>Nonalcoholic steatohepatitis (NASH)</td>
<td>17</td>
<td>13.9</td>
</tr>
<tr>
<td>Chronic active hepatitis with cirrhosis</td>
<td>16</td>
<td>13.1</td>
</tr>
<tr>
<td>Alcoholic cirrhosis</td>
<td>11</td>
<td>9.0</td>
</tr>
<tr>
<td>Alcoholic cirrhosis with hepatitis C</td>
<td>6</td>
<td>4.9</td>
</tr>
<tr>
<td>Alpha-1-antitrypsin deficiency</td>
<td>6</td>
<td>4.9</td>
</tr>
<tr>
<td>Primary biliary cirrhosis</td>
<td>6</td>
<td>4.9</td>
</tr>
<tr>
<td>Hepatoma and cirrhosis</td>
<td>5</td>
<td>4.1</td>
</tr>
<tr>
<td>Benign tumor: polycystic liver disease</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>Amyloidosis</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Cryptogenic cirrhosis (idiopathic)</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Metabolic disease: Wilson’s disease</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Re-transplant: primary graft failure</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Other</td>
<td>16</td>
<td>13.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>122</strong></td>
<td></td>
</tr>
</tbody>
</table>
Research

Principal Investigator — Dr. John Fung
Co-investigator — Dr. Bijan Eghtesad
A 24-Month Multicenter, Randomized, Open-Label Study to Evaluate the Efficacy and Safety of Concentration-Controlled Everolimus with Corticosteroids in Combination with Minimization or Elimination of Tacrolimus in De Novo Transplant Recipients Compared to Tacrolimus and Corticosteroid

Principal Investigator — Dr. Srinivasan Dasarathy
Co-investigator — Dr. Bijan Eghtesad
Patient Perception of Nutritional Counseling During Evaluation for Liver Transplantation: A Prospective Study

Principal Investigator — Dr. Srinivasan Dasarathy
Co-investigator — Dr. Bijan Eghtesad
Prevalence and Outcome of Malnutrition in Cirrhotic Patients Undergoing Evaluation for Liver Transplantation: A Prospective Study

Principal Investigator — Dr. Bijan Eghtesad
A Randomized Controlled Clinical Trial of Low-Dose Thymoglobulin and Extended Delay of Calcineurin Inhibitor Therapy for Renal Protection After Liver Transplantation

Principal Investigator — Dr. Bijan Eghtesad
Enhancing DCD Utilization with Thrombolytic Therapy Focusing on Liver and Kidney Transplantation

Principal Investigator — Dr. Bijan Eghtesad
A Phase II Randomized, Double-Blind, Placebo-Controlled Study of the Clinical Effectiveness of a Human Monoclonal Antibody Against Hepatitis C Virus E2 Glycoprotein (MBL-HCV1) in Hepatitis C-Infected Patients Undergoing Liver Transplantation

Principal Investigator — Dr. Bijan Eghtesad
Graft Versus Host Disease (GVHD) After Liver Transplantation: Does Immunomodulation Work?

Principal Investigator — Dr. Bijan Eghtesad
Renal-Preserving Role of Thymoglobulin Induction in Patients with Renal Failure and on Hemodialysis Undergoing Liver Transplantation

Principal Investigator — Dr. Dympna Kelly
Hepatic Artery (HA) Infusion of Adenosine Increases Arterial Blood Flow in Adult Liver Transplant Recipients: A Pilot Study

Principal Investigator — Dr. Bijan Eghtesad
Chart Review: Survival Rates and Biliary Complications in Recipients of Partial and Graft Liver Transplants Recovered from Cardiac Death Donors
Principal Investigator — Dr. Srinivasan Dasarathy
Registry: Impact of Malnutrition in Outcomes of Patients with Cirrhosis of the Liver

Principal Investigator – Dr. Charles Miller
A Prospective, Multicenter Comparison of Multiphase Contrast-Enhanced CT and Multiphase Contrast-Enhanced MRI for Diagnosis of Hepatocellular Carcinoma and Liver Transplant Allocation

Principal Investigator — Dr. Koji Hashimoto
Chart Review: Prospective Study of Ischemia/Reperfusion Injury in Liver Transplantation

Principal Investigator — Dr. John Fung
Solid Organ Transplantation in HIV: Multisite Study

Selected Publications


Leadership

Charles Miller, MD  
Program and Surgical Director, Liver Transplant

Nizar N. Zein, MD  
Medical Director, Liver Transplant; Chief, Section of Hepato-biliary Diseases

Vera Hupertz, MD  
Director, Pediatric Liver Transplantation

Phone number

216.444.8770

Fast facts

Initiated: 1984

First adult liver transplant:  
Nov. 8, 1984

UNOS approval:  
March 21, 1988

CMS/Medicare approval:  
Oct. 14, 1992

Performed first lung-liver transplant in Ohio (2007)

Active living donor program established for liver transplants

As of Dec. 31, 2011,  
1,692 liver transplants have been performed at Cleveland Clinic

clevelandclinic.org/transplant
Staff

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