## ACCEPTED MANUSCRIPT

Supplementary Table 1: Data that could be extracted from narratives of 973 waitlist candidates with approved HPS exceptions

Available clinical data	Number with data, (%)
Transthoracic echocardiogram (TTE)	833 (85.6)
Definitive shunt on TTE	815 (97.8)
Definitive intrapulmonary shunt on TTE	461 (56.6)
Timing of bubbles reported as "late" when shunt when	112 (13.7)
definitively present	
Macro-aggregated albumin (MAA) scan performed	223 (23.7)
MAA shunt fraction reported	114 (51.1)
Pulmonary function test data	165 (17.0)
Presence or absence of concomitant pulmonary disease	973 (100.0)
Need for supplemental oxygen	384 (39.5)
Arterial blood gas (ABG)	855 (87.8)
ABG on room-air	747 (87.4)

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Supplementary Table 2: Pre-liver transplant HPS waitlist candidates dying on the waitlist or within 90 days of de-listing for waitlist candidates with HPS MELD exceptions\*

PaO <sub>2</sub> category	Deaths on the waitlist or within 90 days of delisting, (%)
≤44.0mmHg, N=94	9 (9.6)
44.1-54.0mmHg, N=344	30 (8.7)
54.1-61.0mmHg, N=364	32 (8.8)
≥61.1mmHg, N=84	6 (7.1)
Can't determine, N=87	9 (10.3)

<sup>\*</sup>  $PaO_2$  categories based on best-fit cubic spline  $PaO_2$  cutpoints. "Can't determine" patients are those without room-air oxygenation data. P=0.96 for chi-square test comparing the proportion dying on the waitlist or within 90 days of de-listing.

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Supplementary Figure 1: Flow diagram of inclusion of liver transplant waitlist candidates submitting an HPS exception application from 2002-2012

**1,075** Waitlisted liver transplant candidates who applied for HPS MELD exception points from 2/27/02-12/14/12

973 Applicants with at least one HPS MELD exception approved by regional review board

- 105 Approved HPS exception applicants with other forms of oxygenation data
  - 39 Reported only as on "home oxygen"
  - 25 No oxygenation data provided
  - **18** Room-air oxygen saturation by pulse oximetry
  - Pulse oximetry only reported as <96% while on supplemental O<sub>2</sub>
  - 8 PaO<sub>2</sub> only reported as <60mmHg

Approved HPS exception applicants with initial room-air partial-pressure of oxygen (PaO<sub>2</sub>) in arterial blood provided

227 PaO<sub>2</sub><50mmHg

**511** PaO<sub>2</sub>50-59mmHg

**112** PaO<sub>2</sub>60-69mmHg

**18** PaO<sub>2</sub>>70mmHg