SUPPLEMENTARY FILES

Figure S1. Patients' selection criteria from the United States Acute Liver Failure Study Group registry (January 1998 to August 2016). *CRRT: continuous renal replacement therapy; IRRT: intermittent renal replacement therapy; RRT: renal replacement therapy.*
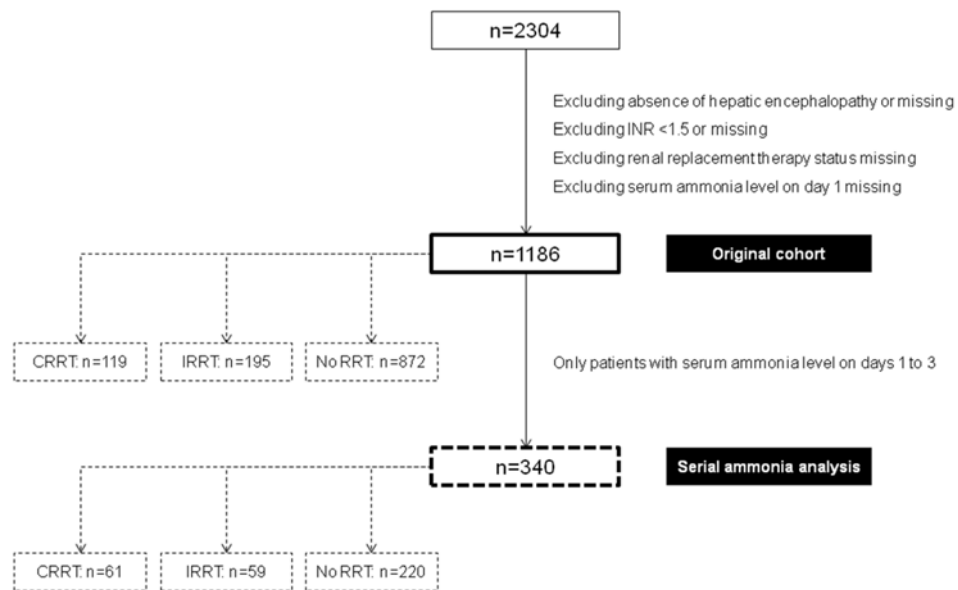
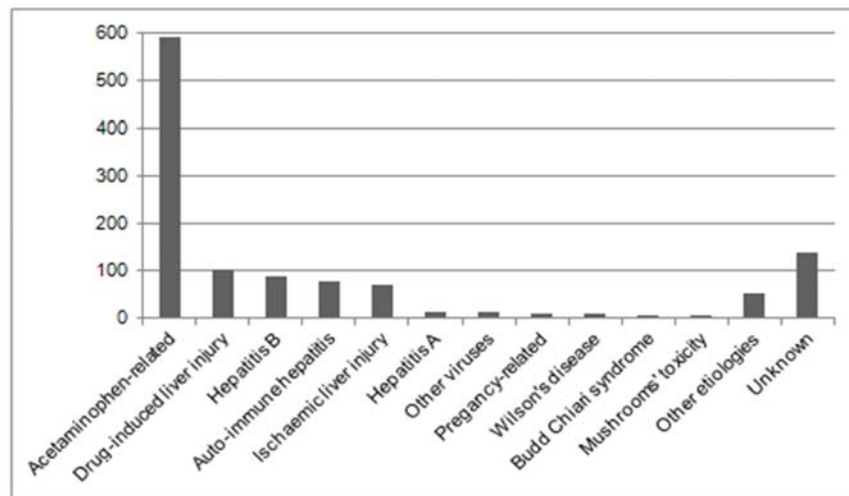**Figure S2. Etiology of acute liver failure for the original cohort (n=1186).**

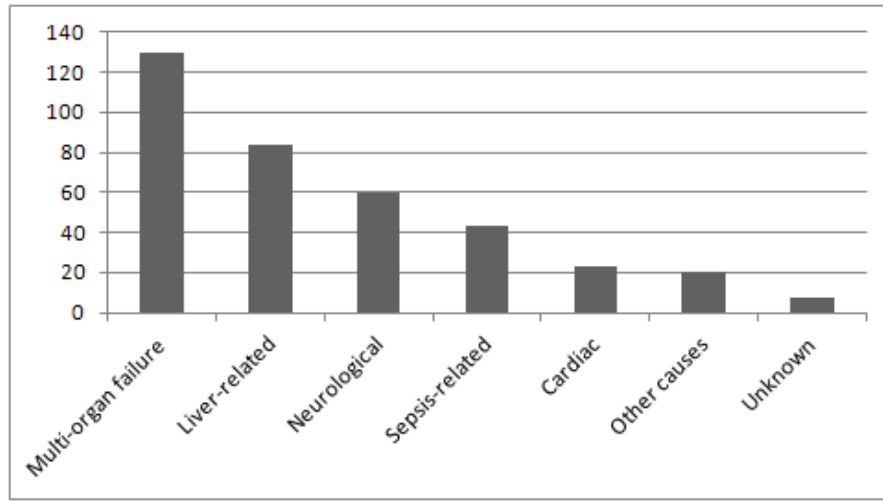**Figure S3. Causes of death for the original cohort (n=1186).**

Table S1. Baseline characteristics of patients with acute liver failure stratified by type of renal replacement therapy at study admission (n=340).

	n	n (%) or median (IQR)		P*
		CRRT on Day 1 (n=119)	IRRT on Day 1 (n=195)	
Age	314	38 (27-51)	38 (28-48)	0.94
Sex (female)	314	81 (68%)	131 (67%)	0.87
Race	314			0.45
White		84 (71%)	150 (77%)	
African-american		18 (15%)	22 (11%)	
Other		17 (14%)	23 (12%)	
Etiology (acetaminophen)	314	63 (53%)	106 (54%)	0.81
HE grades 3-4	314	83 (70%)	140 (72%)	0.70
Organ support	314			
Mechanical Ventilation		97 (82%)	157 (81%)	0.83
Vasopressors		76 (64%)	100 (51%)	0.029
Biochemistry (admission)				
Ammonia (µmol/l)	314	133 (71-203)	102 (66-170)	0.052
INR	314	3.2 (2.4-4.6)	2.7 (1.9-4.0)	0.003
Bilirubin (mg/dl)	312	5.8 (3.5-8.9)	6.4 (4.0-11.2)	0.17
ALT (U/l)	309	3175 (1174-4645)	2370 (821-5005)	0.36
Creatinine (mg/dl)	312	2.3 (1.5-3.5)	3.2 (2.0-4.7)	<0.001
Phosphate (mmol/dl)	296	3.3 (2.1-5.6)	4.2 (2.7-6.2)	0.034
pH	301	7.39 (7.31-7.45)	7.41 (7.33-7.46)	0.11
Lactate (mmol/l)	244	6.2 (3.3-9.7)	7.9 (3.7-12.7)	0.025

IQR: inter-quartile range. RRT: renal replacement therapy. HE: hepatic encephalopathy. IMV: invasive mechanical ventilation. INR: international normalized ratio. ALT: alanine aminotransferase.

* Mann-Whitney or Chi-square tests. α=0.05

Table S2. Serial serum ammonia level of patients with acute liver failure stratified by etiology (acetaminophen vs. other etiologies) from days 1 to 3 post study admission (n=340).

| | n | Median (IQR) | | | P* |
		Day 1	Day 2	Day 3	
Ammonia (µmol/l)					
Acetaminophen					
Overall	194	100 (70-165)	90 (62-130)	76 (48-105)	<0.001
CRRT (on days 1-2)	35	140 (78-143)	103 (73-151)	86 (66-126)	<0.001
IRRT (on days 1-2)	36	100 (69-135)	86 (60-105)	68 (42-103)	0.057
No RRT (on days 1-2)	123	97 (70-154)	89 (63-124)	76 (48-104)	<0.001
Other etiologies					
Overall	146	100 (72-148)	83 (65-123)	87 (56-114)	0.004
CRRT (on days 1-2)	26	143 (93-185)	109 (78-181)	88 (64-133)	0.013
IRRT (on days 1-2)	23	90 (65-133)	104 (77-178)	87 (56-139)	0.41
No RRT (on days 1-2)	97	97 (66-136)	77 (59-112)	86 (55-107)	0.015

IQR: inter-quartile range. RRT: renal replacement therapy. CRRT: continuous renal replacement therapy. IRRT: intermittent renal replacement therapy.
* Friedman test (comparisons of day 1 vs. day 2 vs. day 3).
α=0.05.

Table S3. Serial characteristics of patients with acute liver failure (excluding 16 patients on ornithine phenylacetate trial) from days 1 to 3 post study admission (n=324).

	n	Day 1	n	Day 2	n	Day 3	P*
RRT (on each day)							
Overall	324	88 (27%)	324	108 (33%)	324	114 (35%)	<0.001
CRRT	324	42 (13%)	324	53 (16%)	324	52 (16%)	0.031
IRRT	324	46 (14%)	324	55 (17%)	324	62 (19%)	0.001
HE grades 3-4	324	162 (50%)	306	171 (56%)	324	165 (51%)	0.024
Ammonia (µmol/l)							
Overall	324	100 (70-156)	324	88 (64-127)	324	81 (52-112)	<0.001
CRRT (on days 1-2)	57	140 (79-199)	57	106 (78-176)	57	88 (66-126)	<0.001
IRRT (on days 1-2)	58	99 (69-134)	58	88 (63-124)	58	74 (44-114)	0.061
No RRT (on days 1-2)	209	96 (67-145)	209	82 (63-117)	209	79 (51-105)	<0.001
INR	324	3.0 (2.1-4.2)	320	2.4 (1.8-3.4)	317	2.0 (1.6-3.0)	<0.001
Bilirubin (mg/dl)	321	5.4 (3.0-15.6)	317	6.6 (3.5-15.1)	317	8.0 (4.1-16.8)	<0.001
Creatinine (mg/dl)	321	1.50 (0.90-2.80)	324	1.57 (0.80-2.80)	320	1.50 (0.80-2.45)	<0.001
Lactate (mmol/l)	229	4.2 (2.5-8.3)	184	3.2 (2.0-6.2)	161	2.8 (1.7-5.8)	<0.001

IQR: inter-quartile range. RRT: renal replacement therapy. CRRT: continuous renal replacement therapy. IRRT: intermittent renal replacement therapy. HE: hepatic encephalopathy. INR: international normalized ratio.
* Friedman test (comparisons of day 1 vs. day 2 vs. day 3).
α=0.05.