Supplemental Digital Content Appendix 1 - Risk stratification formulae:

Revised Natural History Model for PSC (the "Mayo model") (5):

The risk score (R) was calculated using the formula:

$R = 0.03 * [\text{age (years)}] + 0.54 * \log_e [\text{bilirubin (mg/dL)}] + 0.54 * \log_e [\text{AST (U/L)}] - 0.84 * [\text{albumin (g/dL)}] + 1.24$ if history of variceal bleeding was present.

Patients were classified as low risk if $R < 0$, medium risk if $0 \leq R < 2$, and high risk if $R \geq 2$ (35).

We calculated the predicted survival for each patient at years 1-4 using the formula: $S(t) = S_0(t)^{\exp(R-1)}$, where baseline survival probabilities $S_0(t)$ each year were: year 0 = 1, year 1 = 0.963, year 2 = 0.919, year 3 = 0.873, and year 4 = 0.833.

The Amsterdam-Oxford model (the "A-O model") (10):

The prognostic index (PI) was calculated using the formula (where LLN and ULN represent the lower and upper limits of normal, respectively):

$PI = 0.018 * [\text{age at diagnosis (years)}] - 2.485 * \log_{10} [\text{albumin(x LLN)}] + 2.451 * \text{abs} (\log_{10} [\text{platelets(x LLN)}] - 0.5) + 0.347 * \log_{10} [\text{AST(x ULN)}] + 0.393 * \log_{10} [\text{ALP (x ULN)}] + 0.337 * \log_{10} [\text{bilirubin(x ULN)}] + 0.323$ if a large duct phenotype was present

Patients were classified as low risk if $PI < 1.032$, low-intermediate risk if $1.578 > PI \geq 1.032$, moderate risk if $2.266 > PI \geq 1.578$, and high risk if $PI \geq 2.266$.

We calculated the predicted survival for each patient at years 1-10 using the formula: $S(t) = S_0(t)^{\exp(PI-1.646)}$, where baseline survival probabilities $S_0(t)$ each year were: year 0 = 1, year 1 = 0.976003276, year 2 = 0.958190391, year 3 = 0.944872387, year 4 = 0.921801174, year 5 = 0.911738594, year 6 = 0.886368701, year 7 = 0.870414839, year 8 = 0.844120125, year 9 = 0.812447482, and year 10 = 0.788752707.

**Boberg et al time-dependent Cox regression model (the "Boberg model") (6):**

The prognostic index (PI) was calculated using the formula:

$PI = 1.04 * [\log_e (\text{bilirubin[umol/L]}) - 3.31] - 0.12 * (\text{albumin (g/L)} - 37.27) + 0.013 (\text{age at diagnosis (years)} - 36.04)$

The one year survival estimate was obtained by plotting the PI on Figure #, which we obtained by overlaying a best-fit graph on Figure 3 of the original manuscript (6) and generating the following best-fit polynomial equation: survival = 0.0011*PI^5 - 0.0055*PI^4 - 0.0035*PI^3 - 0.01*PI^2 - 0.0379*PI + 0.9641, graphed below.
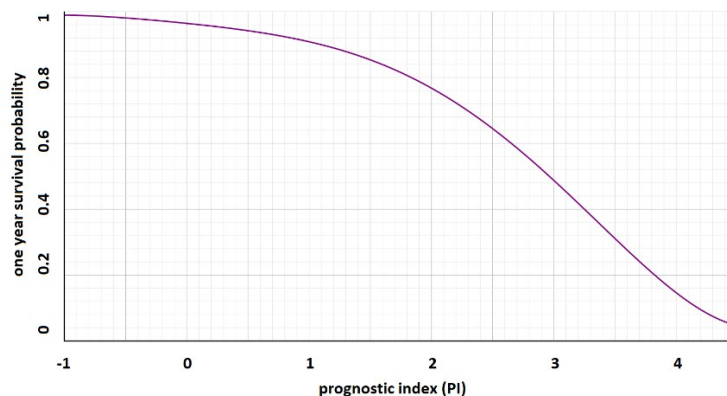
Supplemental Digital Content Figure 1. Relative contribution of predictors to risk scores in each Mayo risk group
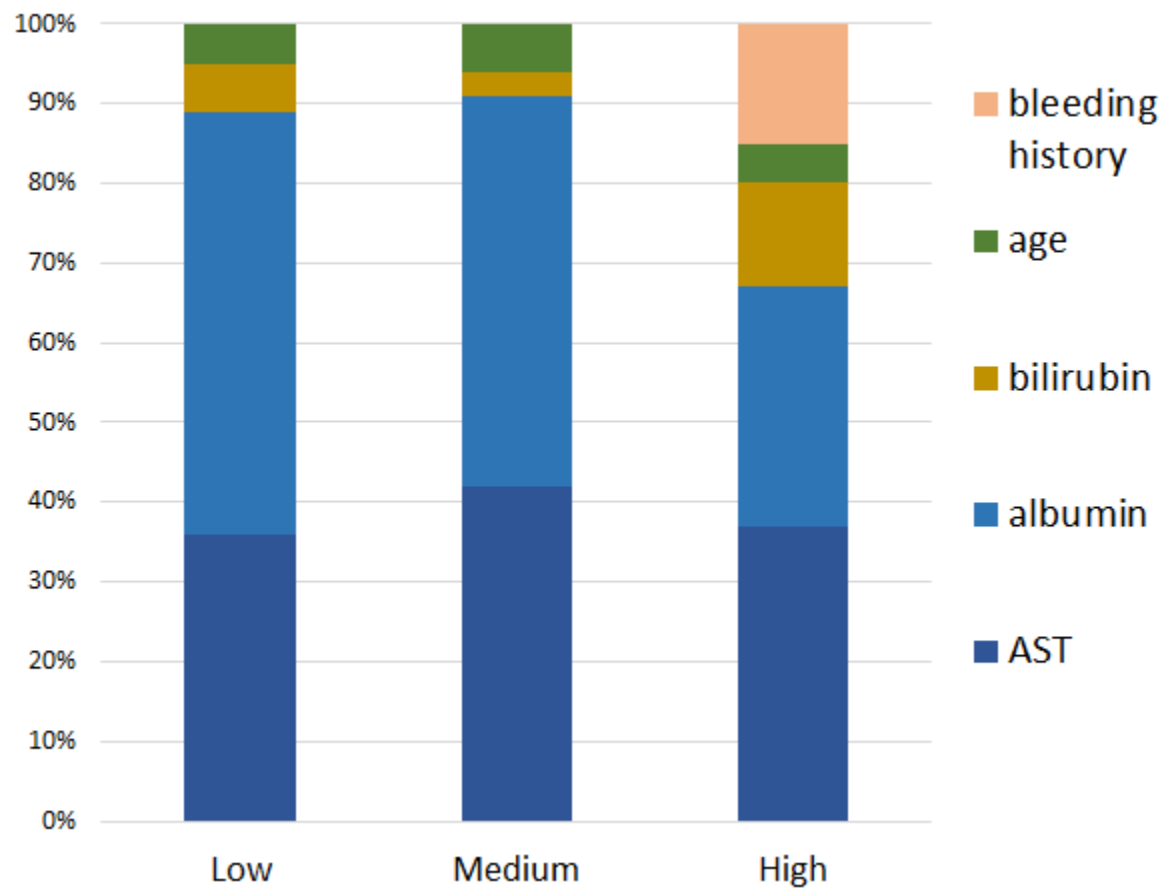
Supplemental Digital Content Figure 2. Relative contribution of predictors to risk scores in each A-O risk group
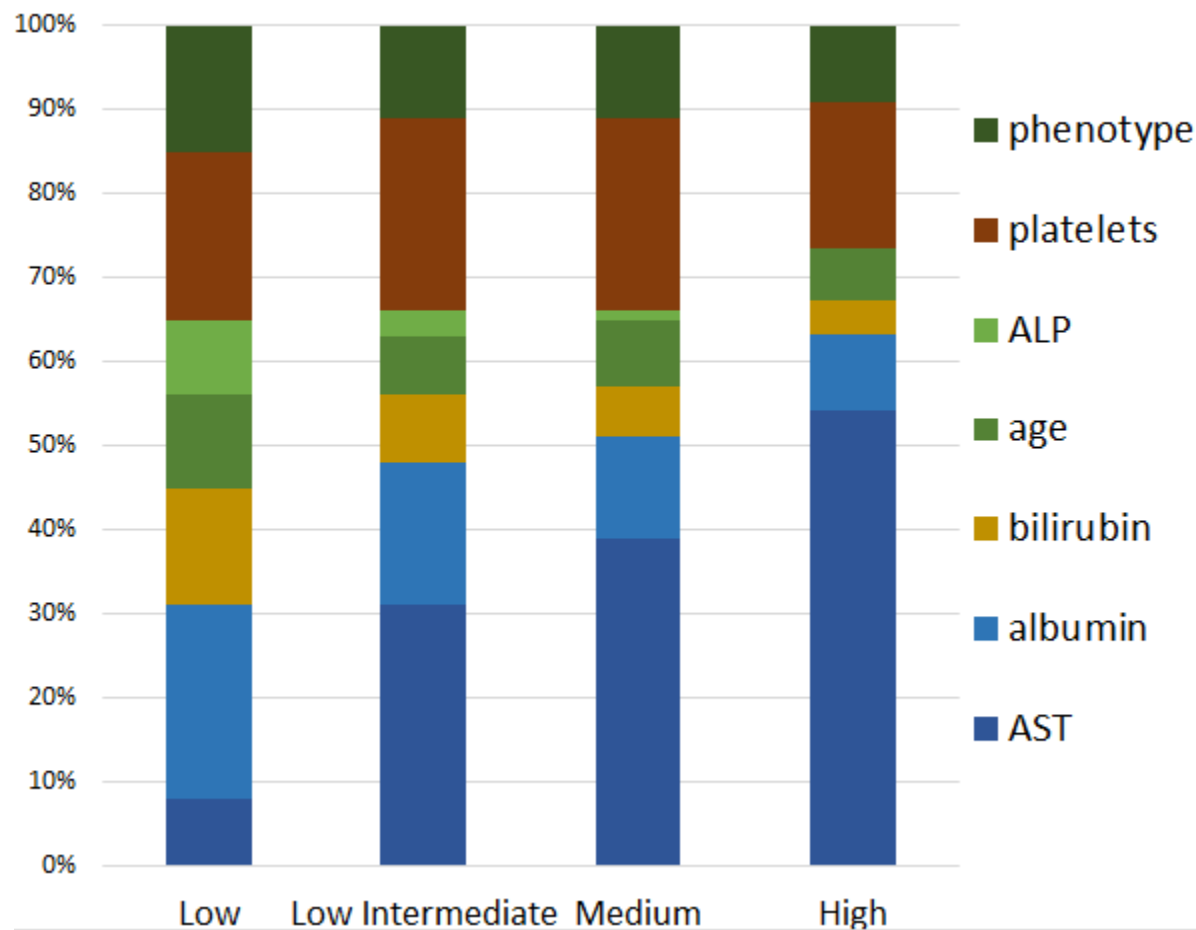
Supplemental Digital Content Table 1. Characteristics of each risk group in the Mayo model

	Overall risk score	Age (yr)	Albumin (g/dL)	AST (U/L)	Bilirubin (mg/dL)	Bleeding History
Low n=512	-1.02 (-1.59 to -0.47)	12.0 (7.6-14.5)	4.1 (3.9-4.4)	82 (46-156)	0.5 (0.3-0.9)	0.6% (3/507)
Med n=238	0.51 (0.14 to 1.06)	13.0 (10.5-15.0)	3.9 (3.4-4.0)	190 (147-261)	1.5 (1.3-2.4)	20% (47/236)
High n=31	2.79 (2.39 to 3.19)	13.0 (7.3-14.3)	3 (2.7-3.4)	336 (206-1216)	7.5 (2.9-11.7)	61% (19/31)
p		0.0001	0.0001	0.0001	0.0001	0.0001

Data presented as median(IQR) or n(%)

Supplemental Digital Content Table 2. Characteristics of each risk group in the Amsterdam-Oxford model

	A-O score	Age (yr)	Albumin (g/dL)	ALP (x ULN)	AST (U/L)	Bilirubin (mg/dL)	Large duct phenotype	Platelets (x1000/L)
Low (n = 145)	0.44 (0-0.75)	13 (10-15)	4.3 (4.0-4.5)	0.6 (0.4-0.8)	41 (29-56)	0.4 (0.3-0.6)	66% (95/145)	296 (255-325)
Low Int (n = 73)	1.35 (1.19-1.46)	12 (9-15)	4.3 (4.0-4.5)	0.8 (0.5-1.1)	71 (47-88)	0.5 (0.4-0.8)	71% (52/73)	325 (244-390)
Medium (n = 114)	1.86 (1.71-2.07)	12 (8-15)	4.0 (3.8-4.3)	0.9 (0.6-1.2)	85 (60-137)	0.6 (0.3-1.0)	71% (80/112)	325 (259-413)
High (n = 449)	3.18 (2.82-4.26)	12 (8-15)	4.0 (3.5-4.0)	1 (0.9-1.9)	190 (135-261)	1.5 (0.7-1.7)	76% (339/444)	325 (242-396)
p		0.165	0.0001	0.0001	0.0001	0.0001	0.08	0.0004

Data presented as median(IQR) or n(%)