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| **Supplementary Table 1.** Cox regression models for adverse clinical outcomes stratified by cACLD and liver stiffness change |
|  | **Liver stiffness change**  | **Subjects, n** | **Events, n (%)** | **Adjusted HR (95% CI)** | **P-value** |
| **All-cause death** |  |  |  |  |  |
| Non-cACLD | Liver stiffness stable | 6317 | 36 (0.6%) | *Ref.* |  |
|  | Liver stiffness progression | 296 | 7 (1.7%) | 3.797 (1.522 - 9.474) | 0.004 |
| cACLD | Liver stiffness regression | 804 | 12 (1.5%) | 1.495 (0.645 - 3.467) | 0.348 |
|  | Liver stiffness stable | 336 | 15 (4.5%) | 2.706 (1.109 - 6.606) | 0.029 |
|  | Liver stiffness progression | 2351 | 17 (7.2%) | 5.576 (2.598 - 11.968) | <0.001 |
| **LRE** |  |  |  |  |  |
| Non-cACLD | Liver stiffness stable | 6317 | 34 (0.5%) | *Ref.* |  |
|  | Liver stiffness progression | 296 | 13 (4.4%) | 7.548 (3.844 - 14.823) | <0.001 |
| cACLD | Liver stiffness regression | 804 | 50 (6.2%) | 6.491 (3.883 - 10.851) | <0.001 |
|  | Liver stiffness stable | 336 | 50 (14.9%) | 12.532 (7.317 - 21.462) | <0.001 |
|  | Liver stiffness progression | 2351 | 61 (26.0%) | 21.338 (13.061 - 34.858) | <0.001 |
| Adjusted for age, sex, BMI, diabetes, hypertension, baseline LSM and baseline CAP.*Abbreviations:* BMI, body mass index; cACLD, compensated advanced chronic liver disease; CAP, controlled attenuation parameter; CI, confidence interval; HR, hazard ratios; LSM, liver stiffness measurement. |

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| **Supplementary Table 2.** Rates of liver stiffness changes stratified by cACLD and statin usage. |
|  | **Liver stiffness change**  | **No Statin use** | **Statin use** | **P-value** |
| All subjects |  |  |  | <0.001 |
|  | Liver stiffness stable | 3817 (80.3%) | 2836 (87.7%) |  |
|  | Liver stiffness progression | 386 (8.1%) | 145 (4.5%) |  |
| Non-cACLD |  |  |  | <0.001 |
|  | Liver stiffness stable | 3556 (94.5%) | 1509 (97.2%) |  |
|  | Liver stiffness progression | 205 (5.5%) | 44 (2.8%) |  |
| cACLD |  |  |  | 0.002 |
|  | Liver stiffness regression | 552 (55.5%) | 132 (64.1%) |  |
|  | Liver stiffness stable | 261 (26.3%) | 44 (21.4%) |  |
|  | Liver stiffness progression | 181 (18.2%) | 30 (14.6%) |  |
| *Abbreviations:* cACLD, compensated advanced chronic liver disease. |

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| **Supplementary Table 3.** Sensitivity analyses.  |
|  | **Adjusted HR or SHR****(95% CI)** | **P-value** |
| Follow-up > 3 years |  |  |
| All-cause death | 0.277 (0.145 - 0.529) | <0.001 |
| LRE | 0.411 (0.283 - 0.596) | <0.001 |
| Liver stiffness progression | 0.389 (0.308 - 0.491) | <0.001 |
| Liver stiffness regression | 0.96 (0.803 - 1.148) | 0.655 |
| PSM |  |  |
| All-cause death | 0.273 (0.131 - 0.566) | <0.001 |
| LRE | 0.524 (0.343 - 0.802) | 0.003 |
| Liver stiffness progression | 0.449 (0.354 - 0.570) | <0.001 |
| Liver stiffness regression | 0.899 (0.736 - 1.100) | 0.302 |
| Competing risk regression |  |  |
| LRE | 0.441 (0.321 - 0.604) | <0.001 |
| Liver stiffness progression | 0.501 (0.410 - 0.611) | <0.001 |
| Liver stiffness regression | 1.098 (0.954 - 1.263) | 0.193 |
| LSM cut-off set at 30% for cACLD diagnosis  |  |  |
| Liver stiffness progression | 0.414 (0.332 - 0.515) | <0.001 |
| Liver stiffness regression | 0.921 (0.777 - 1.093) | 0.346 |
| Adjusted age, sex, BMI, diabetes, hypertension, baseline LSM and baseline CAP.*Abbreviations:* BMI, body mass index; cACLD, compensated advanced chronic liver disease; CAP, controlled attenuation parameter; CI: confidence interval; HR: hazard ratios; LRE, liver-related events; LSM, liver stiffness measurement; SHR, subdistribution hazard ratios; PSM, propensity score matching.  |

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| **Supplementary Table 4.** Clinical characteristics of the cohort stratified by statin usage after propensity score matching. |
| **Characteristics** | **No statin use (N=2,499)** | **Statin use****(N=2,499)** | **P-value** |
| Age (years) | 54.8 ± 13.3 | 54.6 ± 12.0 | 0.577 |
| Female sex, n (%) | 1,417 (56.7%) | 1,431 (57.3%) | 0.689 |
| BMI (kg/m2)  | 27.4 ± 4.7 | 27.2 ± 4.2 | 0.166 |
| Diabetes, n (%)  | 970 (38.8%) | 953 (38.1%) | 0.621 |
| Hypertension, n (%)  | 1,032 (41.3%) | 991 (39.7%) | 0.237 |
| ALT (IU/L)  | 37.0 (23.0, 62.0) | 34.0 (22.0, 56.0) | <0.001 |
| AST (IU/L)  | 31.0 (23.0, 46.9) | 29.0 (21.0, 44.0) | <0.001 |
| GGT (IU/L)  | 43.0 (27.0, 78.0) | 42.0(25.3, 72.0) | 0.071 |
| Albumin (g/L)  | 44.6 ± 3.4 | 44.6 ± 3.3 | 0.514 |
| Total bilirubin (μmol/L)  | 13.8 ± 8.7 | 13.6 ± 6.7 | 0.291 |
| Platelet count (×109/L)  | 235.8 ± 67.3 | 243.9 ± 64.2 | <0.001 |
| Creatinine (µmol/L) | 70.7 (60.1, 81.3) | 70.7 (58.3, 82.0) | 0.290 |
| Fasting glucose (mmol/L) | 6.2 ± 1.8 | 6.5 ± 1.9 | <0.001 |
| TC (mmol/L) | 4.9 ± 1.0 | 4.9 ± 1.3 | 0.818 |
| HDL (mmol/L) | 1.3 ± 0.4 | 1.2 ± 0.3 | <0.001 |
| LDL (mmol/L) | 2.9 ± 0.9 | 2.9 ± 1.1 | 0.958 |
| Triglycerides (mmol/L) | 1.8 ± 1.2 | 2.0 ± 1.4 | <0.001 |
| cACLD, n (%) | 479 (19.2%) | 338 (13.5%) | <0.001 |
| LSM, kPa (IQR) | 5.9 (4.5, 8.7) | 5.6 (4.5, 7.6) | <0.001 |
| CAP, dB/m (IQR) | 298.0 (269.0, 330.0) | 301.0 (274.0, 333.0) | 0.002 |
| Follow-up time, years (IQR) | 2.8 (1.8, 4.2) | 3.2 (2.0, 4.9) | <0.001 |
| *Abbreviations:* AST, alanine aminotransferase; AST, aspartate aminotransferase; BMI, body mass index; cACLD: compensated advanced chronic liver disease; CAP: controlled attenuation parameter; CI, confidence interval; GGT, gamma-glutamyl transpeptidase; HDL, high-density lipoprotein; HR, hazard ratios; LDL, Low-density lipoprotein; LRE, liver-related events; LSM, liver stiffness measurement; TC, total cholesterol. |