# Supplementary 1. PRISMA Checklist

<table>
<thead>
<tr>
<th>Section/Topic</th>
<th>#</th>
<th>Checklist Item</th>
<th>Reported on Page #</th>
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</thead>
<tbody>
<tr>
<td><strong>TITLE</strong></td>
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</tr>
<tr>
<td>Title</td>
<td>1</td>
<td>Identify the report as a systematic review, meta-analysis, or both.</td>
<td>1</td>
</tr>
<tr>
<td><strong>ABSTRACT</strong></td>
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<tr>
<td>Structured summary</td>
<td>2</td>
<td>Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.</td>
<td>3</td>
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<tr>
<td><strong>INTRODUCTION</strong></td>
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<tr>
<td>Rationale</td>
<td>3</td>
<td>Describe the rationale for the review in the context of what is already known.</td>
<td>4-5</td>
</tr>
<tr>
<td>Objectives</td>
<td>4</td>
<td>Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).</td>
<td>6</td>
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<tr>
<td><strong>METHODS</strong></td>
<td></td>
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<tr>
<td>Protocol and registration</td>
<td>5</td>
<td>Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.</td>
<td></td>
</tr>
<tr>
<td>Eligibility criteria</td>
<td>6</td>
<td>Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.</td>
<td>7-8</td>
</tr>
<tr>
<td>Information sources</td>
<td>7</td>
<td>Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.</td>
<td>7</td>
</tr>
<tr>
<td>Data collection process</td>
<td>8</td>
<td>Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.</td>
<td>7</td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>9</td>
<td>State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).</td>
<td>8</td>
</tr>
<tr>
<td>Data items</td>
<td>10</td>
<td>Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.</td>
<td>8</td>
</tr>
<tr>
<td>Risk of bias in individual studies</td>
<td>11</td>
<td>List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.</td>
<td>8</td>
</tr>
<tr>
<td>Data collection process</td>
<td>12</td>
<td>Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.</td>
<td>9</td>
</tr>
<tr>
<td>Summary measures</td>
<td>13</td>
<td>State the principal summary measures (e.g., risk ratio, difference in means).</td>
<td>9-10</td>
</tr>
<tr>
<td>Synthesis of results</td>
<td>14</td>
<td>Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., $t^2$) for each meta-analysis.</td>
<td>9-11</td>
</tr>
<tr>
<td>Section/Topic</td>
<td>#</td>
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<tr>
<td>Risk of bias across studies</td>
<td>15</td>
<td>Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).</td>
<td>9-11</td>
</tr>
<tr>
<td>Additional analyses</td>
<td>16</td>
<td>Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.</td>
<td>9-10</td>
</tr>
<tr>
<td>RESULTS</td>
<td></td>
<td></td>
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<tr>
<td>Study selection</td>
<td>17</td>
<td>Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.</td>
<td>12</td>
</tr>
<tr>
<td>Study characteristics</td>
<td>18</td>
<td>For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.</td>
<td>12</td>
</tr>
<tr>
<td>Risk of bias within studies</td>
<td>19</td>
<td>Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).</td>
<td>13-14</td>
</tr>
<tr>
<td>Results of individual studies</td>
<td>20</td>
<td>For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.</td>
<td>13-15</td>
</tr>
<tr>
<td>Synthesis of results</td>
<td>21</td>
<td>Present the main results of the review. If meta-analyses done, include for each, confidence intervals and measures of consistency.</td>
<td>13-15</td>
</tr>
<tr>
<td>Risk of bias across studies</td>
<td>22</td>
<td>Present results of any assessment of risk of bias across studies (see Item 15).</td>
<td>14</td>
</tr>
<tr>
<td>Additional analysis</td>
<td>23</td>
<td>Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).</td>
<td>16</td>
</tr>
<tr>
<td>DISCUSSION</td>
<td></td>
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<tr>
<td>Summary of evidence</td>
<td>24</td>
<td>Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).</td>
<td>17</td>
</tr>
<tr>
<td>Limitations</td>
<td>25</td>
<td>Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).</td>
<td>17-18</td>
</tr>
<tr>
<td>Conclusions</td>
<td>26</td>
<td>Provide a general interpretation of the results in the context of other evidence, and implications for future research.</td>
<td>21</td>
</tr>
<tr>
<td>FUNDING</td>
<td></td>
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</tr>
<tr>
<td>Funding</td>
<td>27</td>
<td>Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.</td>
<td></td>
</tr>
</tbody>
</table>


For more information, visit: www.prisma-statement.org.
Supplementary 2. 2820 articles exclusion
9. [Infrequent but serious: autoimmune hepatitis and primary biliary cirrhosis. Early therapy improves long-term prognosis]. *MMW Fortschrritte der Medizin* 2008;150:45.


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Inhibition of TNF-alpha-induced RANTES expression in human hepatocyte-derived cells by fibrates, the hypolipidemic drugs. *International immunopharmacology* 2003;3:225-32.

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cirrhosis with etanercept in a patient with rheumatoid arthritis. Joint, bone, spine : revue
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have a biochemical response to ursodeoxycholic acid. Gastroenterology 2009;136:1281-
7.
long-term effect of ursodeoxycholic acid on laboratory liver parameters in biochemically
non-advanced primary biliary cirrhosis. Clinics and research in hepatology and
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The potent bile acid sequestrant colesvelam is not effective in cholestatic pruritus:
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of primary biliary cirrhosis and autoimmune hepatitis overlap syndrome. Clinical
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Gastroenterological Association 2010;8:530-4.
et al. Effect of ursodeoxycholic acid on the inflammatory activity of indomethacin-
Baseline ductopenia and treatment response predict long-term histological progression in
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2338. Stierlahagen P. [Cholestatic liver diseases and modern bile acid therapy (Medica '89)]. Der Internist 1990;31:434-5.


2395. Tachibana M, Noguchi Y, Fukunaga J, Hiranou N, Yoshidome S, Hirose T. [Influence on dose calculation by difference of dose calculation algorithms in stereotactic lung irradiation: comparison of pencil beam convolution (inhomogeneity correction:


2482. Tomasono JR, Martin Ginis KA, Estabrooks PA, Domenicucci L. 'Changing minds': determining the effectiveness and key ingredients of an educational intervention to enhance healthcare professionals' intentions to prescribe physical activity to patients with physical disabilities. Implementation science : IS 2014;9:30.


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chemotherapy (HDC) and autologous peripheral blood progenitor cell transplantation (PBPC-T) in 148 breast cancer patients. *Anticancer research* 2002;22:3701-8.


Supplementary 3. 162 articles exclusion


130. Rolandi E, Franceschini R, Cataldi A, Cicchetti V, Carati L, Barreca T. Effects of ursodeoxycholic acid (UDCA) on serum liver damage indices in patients with chronic


158. Wu Y, Yao DK, Zhu L. [Clinical observation on the safety and efficacy of ursodeoxycholic acid and fuzheng huayu capsule in the treatment of primary biliary cirrhosis]. *Zhongguo Zhong xi yi jie he za zhi Zhongguo Zhongxiyi jiehe zazhi* = Chinese


Supplementary 4. Summary for risk of bias of included randomized controlled trials. The green symbols represent low risk of bias, the yellow symbols represent unclear risk of bias, and the red symbols represent high risk of bias. The figure was generated using Review Manager Version 5.
Supplementary 5. Forest plot of mortality or liver transplantation in traditional meta-analysis
Supplementary 6. Forest plot of adverse events in traditional meta-analysis
Supplementary 7. Clinical efficacy and safety of all treatments according to network meta-analysis in the sensitivity analysis

A. Mortality or liver transplantation

<table>
<thead>
<tr>
<th>Treatment</th>
<th>NCI</th>
<th>COT plus UDCA</th>
<th>1.65 (0.17, 75.99)</th>
<th>1.02 (0.09, 11.13)</th>
<th>1.72 (0.10, 29.52)</th>
<th>1.36 (0.08, 22.83)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.27</td>
<td>0.01, 5.84</td>
<td>0.28 (0.04, 1.25)</td>
<td>0.48 (0.11, 1.67)</td>
<td>0.38 (0.10, 1.31)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.98</td>
<td>0.09, 11.23</td>
<td>3.59 (0.54, 23.95)</td>
<td></td>
<td></td>
<td>1.34 (0.54, 5.49)</td>
</tr>
<tr>
<td></td>
<td>0.58</td>
<td>0.03, 9.70</td>
<td>2.09 (0.54, 8.80)</td>
<td>0.59 (0.14, 2.55)</td>
<td>OBS</td>
<td>0.80 (0.46, 1.30)</td>
</tr>
<tr>
<td></td>
<td>0.74</td>
<td>0.04, 11.83</td>
<td>2.66 (0.78, 10.20)</td>
<td>0.75 (0.18, 2.94)</td>
<td>1.26 (0.77, 2.16)</td>
<td>UDCA</td>
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</table>

B. Adverse events

<table>
<thead>
<tr>
<th>Treatment</th>
<th>NCI</th>
<th>COT plus UDCA</th>
<th>0.59 (0.01, 25.27)</th>
<th>0.47 (0.01, 13.52)</th>
<th>0.55 (0.01, 12.89)</th>
<th>0.43 (0.01, 9.49)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.70</td>
<td>0.04, 159.17</td>
<td>0.80 (0.05, 11.86)</td>
<td>0.93 (0.11, 8.82)</td>
<td>0.71 (0.09, 6.14)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.13</td>
<td>0.07, 107.25</td>
<td>1.26 (0.09, 18.79)</td>
<td></td>
<td></td>
<td>0.91 (0.17, 4.85)</td>
</tr>
<tr>
<td></td>
<td>1.82</td>
<td>0.08, 102.61</td>
<td>1.08 (0.11, 9.37)</td>
<td>0.85 (0.14, 4.77)</td>
<td>OBS</td>
<td>0.78 (0.41, 1.38)</td>
</tr>
<tr>
<td></td>
<td>2.33</td>
<td>0.11, 126.79</td>
<td>1.41 (0.16, 11.99)</td>
<td>1.10 (0.21, 5.87)</td>
<td>1.28 (0.72, 2.46)</td>
<td>UDCA</td>
</tr>
</tbody>
</table>