## Supplementary Table 1. Background characteristics of the included studies

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Study** | **Duration of follow-up** | **Study location** | **Intervention** | ***n*** | **Age in years (unless otherwise noted)** | **Male,**  ***n*/total**  **(%) or *n***  **(%)** | **Etiology of cirrhosis:**  **Alcohol/Viral/Other (%)** | **Child–Pugh class: A/B/C (%)** | **MELD** | **Ascites,**  ***n* (%)** |
| Acharya et al.1 | June 1987-March 1992 | India | Propranolol | 58 | Mean±SD:  35.8±13.9 | 49 (84.5) | 3/23/32  (5.17/39.7/55.2) | 37/21/0  (63.8/36.2/0.00) | NA | NA |
|  |  |  | Placebo | 56 | Mean±SD:  33.6±12.8 | 48 (85.7) | 4/20/32  (7.14/35.7/57.1) | 31/25/0  (55.4/44.6/0.00) | NA | NA |
| Avgerinos et  al.2 | September 1986-  December 1989 | Greece | Propranolol | 45 | Mean±SD:  57.8±7.3 | 29 (64.4) | 9/25/11  (20.0/55.6/24.4) | 33/8/4  (73.3/17.8/8.89) | NA | NA |
|  |  |  | Placebo | 40 | Mean±SD:  58.6±11.0 | 32 (80.0) | 13/18/9  (32.5/45.0/22.5) | 30/8/2  (75.0/20.0/5.00) | NA | NA |
| Banares et al.3 | NA | Spain | Carvedilol | 14 | Mean±SD:  54.6±8.8 | NA | 8/NA/NA (57.1/NA/NA) | 8/4/2  (57.1/28.6/14.3) | NA | 7 (50.0) |
|  |  |  | Propranolol | 14 | Mean±SD:  51.4±8.5 | NA | 8/NA/NA (57.1/NA/NA) | 5/6/3  (35.7/42.9/21.4) | NA | 7 (50.0) |
|  |  |  | Placebo | 7 | Mean±SD: 57±10.8 | NA | 4/NA/NA (57.1/NA/NA) | 0/5/2  (0.00/71.4/28.6) | NA | 6 (85.7) |
| Banares et al.4 | NA | Spain | Carvedilol | 26 | Mean±SD:  57.9±1.5 | 19 (73.1) | 6/18/2  (23.1/69.2/7.69) | 13/10/3  (50.0/38.5/11.5) | NA | 10 (38.5) |
|  |  |  | Propranolol | 25 | Mean±SD:  58.4±2.2 | 15 (60.0) | 9/16/0  (36.0/64.0/0.00) | 15/6/4  (60.0/24.0/16.0) | NA | 6 (24.0) |
| Bhardwaj et  al.5 | November 2010-  December 2012 | India | Carvedilol | 70 | Mean±SD:  48.8±10.3 | 60 (85.7) | 15/12/43  (21.4/17.1/61.4) | NA | Mean±SD:  9.39±2.58 | 6 (8.57) |
|  |  |  | Placebo | 70 | Mean±SD:  48.8±10.5 | 59 (84.3) | 18/23/29  (25.7/32.9/41.4) | NA | Mean±SD:  9.86±2.79 | 11 (15.7) |
| Binay K De et al.6 | NA | India | Carvedilol | 18 | Mean±SD:  42.3±11.9 | 15 (83.3) | 5/9/4 (27.8/50.0/22.2) | 5/9/4  (27.8/50.0/22.2) | NA | 12 (66.7) |
|  |  |  | Propranolol | 18 | Mean±SD:  47.3±12.9 | 17 (94.4) | 10/5/3  (55.6/27.8/16.7) | 0/13/5  (0.00/72.2/27.7) | NA | 16 (88.9) |
| Bonilha et al.7 | March 2008-July 2011 | Brazil | Propranolol | 34 | Mean±SD: 56±11.1 | 23 (67.6) | 9/17/8  (26.5/50.0/23.5) | 22/8/4  (64.7/23.5/11.8) | Mean±SD:  10.9±3.5 | NA |
|  |  |  | Placebo | 32 | Mean±SD: 53±8.1 | 24 (75.0) | 8/20/4  (25.0/62.5/12.5) | 19/9/4  (59.4/28.1/12.5) | Mean±SD:  12.6±4.1 | NA |
| Burroughs et  al.8 | July 1981-August 1982 | UK | Propranolol | 26 | Mean±SE: 51±14 | 12 (46.2) | 9/7/10  (34.6/26.9/38.5) | 17/6/3  (65.4/23.1/11.5) | NA | NA |

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|  |  |  | Placebo | 22 | Mean±SE: 49±14 | 10 (45.5) | 11/7/4  (50.0/31.8/18.2) | 12/8/2  (54.5/36.4/9.09) | NA | NA |
| Colombo et al.9 | January 1983-June 1985 | Italy | Propranolol | 32 | Mean±SE: 52±9 | 28 (87.5) | 27/3/2  (84.4/9.38/6.25) | 14/18/0  (43.8/56.3/0.00) | NA | NA |
|  |  |  | Placebo | 30 | Mean±SE: 54±11 | 23 (76.7) | 24/2/4  (80.0/6.67/13.3) | 14/16/0  (46.7/53.3/0.00) | NA | NA |
| Conn et al.10 | October 1982-  September 1986 | USA | Propranolol | 51 | Mean±SD: 54±9 | 38 (74.5) | 39/NA/NA (76.5/NA/NA) | 35/11/5  (68.6/21.6/9.80) | NA | 22 (43.1) |
|  |  |  | Placebo | 51 | Mean±SD: 54±11 | 35 (68.6) | 41/NA/NA (80.4/NA/NA) | 24/24/3  (47.1/47.1/5.88) | NA | 31 (60.8) |
| Garden et al.11 | August 1982-July 1986 | UK | Propranolol | 38 | Mean±SD: 56±10 | 26 (68.4) | 27/4/7  (71.1/10.5/18.4) | NA | NA | NA |
|  |  |  | Placebo | 43 | Mean±SD: 53±11 | 26 (60.5) | 30/4/9  (69.8/9.30/20.9) | NA | NA | NA |
| Groszmann et al.12 | NA | USA,  Spain | Propranolol | 51 | Mean±SD: 54±9 | 38 (74.5) | Alcoholic: 39 (76.5)  Nonalcoholic: 12 (23.5) | NA | NA | NA |
|  |  |  | Placebo | 51 | Mean±SD: 54±11 | 35 (68.6) | Alcoholic: 41 (80.4)  Nonalcoholic: 10 (19.6) | NA | NA | NA |
| Gupta et al.13 | June 2013-  December 2013 | India | Carvedilol | 30 | Mean±SD:  41.7±13.1 | 29 (96.7) | 14/10/6 (46.7/33.3/20) | 10/18/2  (33.3/60.0/6.67) | NA | 16 (53.3) |
|  |  |  | Propranolol | 29 | Mean±SD: 45±9.8 | 26 (89.7) | 14/7/8  (48.3/24.1/27.6) | 4/21/4  (13.8/72.4/13.8) | NA | 21 (72.4) |
| Hobolth et al.14 | September 2003August 2009 | Denmark | Carvedilol | 21 | Mean±SD:  58.2±6.8 | 12 (57.1) | 18/2/1  (85.7/9.52/4.76) | 8/7/6  (38.1/33.3/28.6) | Mean±SD:  10.7±4.3 | NA |
|  |  |  | Propranolol | 17 | Mean±SD:  56.2±6.1 | 12 (70.6) | 12/1/4  (70.6/5.88/23.5) | 6/6/4  (35.3/35.3/23.5) | Mean±SD:  10.5±4.0 | NA |
| Ideo et al.15 | September 1982March 1986 | Italy | Nadolol | 30 | Mean (range):  53.2 (35-69) | 22 (73.3) | 14/NA/NA (46.7/NA/NA) | A or B: 22 (73.3) C: 8 (26.7) | NA | 10 (33.3) |
|  |  |  | Placebo | 27 | Mean (range):  53.5 (27-72) | 20 (74.1) | 16/NA/NA (59.3/NA/NA) | A or B: 21 (77.8) C: 6 (22.2) | NA | 11 (40.7) |
| The Italian multicenter project16 | July 1982-January 1984 | Italy | Propranolol | 85 | Mean±SD: 55±11 | 57 (67.1) | 34/10/41  (40.0/11.8/48.2) | 47/32/6  (55.3/37.6/7.06) | NA | 39 (45.9) |
|  |  |  | Placebo | 89 | Mean±SD: 53±11 | 65 (73.0) | 35/14/40  (39.3/15.7/44.9) | 56/28/5  (62.9/31.5/5.62) | NA | 38 (42.7) |

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| Jensen et al.17 | March 1985-  February 1987 | Denmark | Propranolol | 15 | Mean (range): 46 (27-71) | 15 (100) | 12/1/2  (80.0/6.67/13.3) | 4/7/4  (26.7/46.7/26.7) | NA | NA |
|  |  |  | Placebo | 16 | Mean (range): 47 (34-63) | 12 (75.0) | 14/1/1  (87.5/6.25/6.25) | 4/7/5  (25.0/43.8/31.3) | NA | NA |
| Kim et al.18 | August 2010-  December 2014 | Korea | Carvedilol | 55 | Mean±SD:  51.7±8.1 | 41 (74.5) | 33/19/3  (60.0/34.5/5.45) | 23/24/8  (41.8/43.6/14.5) | Median  (IQR): 12  (8-14) | 33 (60.0) |
|  |  |  | Propranolol | 55 | Mean±SD: 54±8.8 | 42 (76.4) | 34/19/2  (61.8/34.5/3.64) | 22/30/3  (40.0/54.5/(5.45) | Median  (IQR): 9  (8-13) | 33 (60.0) |
| Kumar et al.19 | October 2002-  December 2006 | India | Propranolol | 88 | Mean±SD: 42±14 | 75 (85.2) | 33/13/30  (37.5/14.8/34.1) | 35/31/10  (39.8/35.2/11.4) | NA | 24 (27.3) |
|  |  |  | Placebo | 89 | Mean±SD: 41±14 | 78 (87.6) | 30/20/25  (33.7/22.5/28.1) | 26/34/15  (29.2/38.2/16.9) | NA | 33 (37.1) |
| Kumar et al.20 | October 2015March 2017 | India | Carvedilol | 66 | Median (range): 44.0 (22.0-64.0) | 62 (93.9) | 46/4/16  (69.7/6.06/24.2) | NA | NA | 66 (100) |
|  |  |  | Placebo | 70 | Median (range): 43.0 (24.0-66.0) | 64 (91.4) | 52/5/13  (74.3/7.14/18.6) | NA | NA | 70 (100) |
| Lebrec et al.21 | December 1979March 1981 | France | Propranolol | 38 | NA | NA | 65/5/4  (87.8/6.76/5.41) | NA | NA | NA |
|  |  |  | Placebo | 36 | NA | NA | NA | NA | NA |
| Lo et al.22 | March 1985-July 1988 | Taiwan | Propranolol | 26 | Mean±SD:  54.3±5.6 | 23 (88.5) | 3/21/2  (11.5/80.8/7.69) | 18/6/2  (69.2/23.1/7.69) | NA | NA |
|  |  |  | Control | 27 | Mean±SD:  51.2±3.5 | 25 (92.6) | 4/20/3  (14.8/74.1/11.1) | 19/7/1  (70.4/25.9/3.70) | NA | NA |
| Lo et al.23 | October 1995-  December 1997 | Taiwan | Nadolol | 60 | Mean±SD: 53±11 | 45 (75.0) | 17/41/2  (28.3/68.3/3.33) | 11/30/19  (18.3/50.0/31.7) | NA | 33 |
|  |  |  | Placebo | 62 | Mean±SD: 51±12 | 49 (79.0) | 20/41/1  (32.3/66.1/1.61) | 12/28/22  (19.4/45.2/35.5) | NA | 35 |
| Lo et al.24 | March 2005-July 2009 | Taiwan | Carvedilol | 61 | Mean±SD:  53.0±11.6 | 7 (11.5) | 22/37/2  (36.1/60.7/3.28) | 24/29/8  (39.3/47.5/13.1) | NA | 24 (39.3) |
|  |  |  | Nadolol +  Isosorbide mononitrate | 60 | Mean±SD:  49.8±10.4 | 12 (20.0) | 26/29/5  (43.4/48.3/8.33) | 22/23/15  (36.7/38.3/25.0) | NA | 25 (41.7) |
| Merkel et al.25 | December 1996April 2000 | Italy | Nadolol | 83 | Mean±SD: 56±9 | 45 (54.2) | 47/34/2  (56.6/41.0/2.41) | NA | NA | 18 (21.7) |
|  |  |  | Placebo | 78 | Mean±SD: 57±9 | 38 (48.7) | 45/28/5  (57.7/35.9/6.41) | NA | NA | 23 (29.5) |

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| Pascal et al.26 | June 1983-  December 1984 | France | Propranolol | 118 | Mean±SD:  51.5±8.5 (good condition),  55.5±8.3 (poor condition) | NA | 109/NA/NA  (92.4/NA/NA) | NA | NA | NA |
|  |  |  | Placebo | 112 | Mean±SD:  55.3±11.2  (good condition),  54.2±11.6 (poor condition) | NA | 98/NA/NA (87.5/NA/NA) | NA | NA | NA |
| Peña et al.27 | June 1999-October 2003 | Spain | Nadolol | 43 | Mean (range): 60 (36-75) | 33 (76.7) | 27/12/4  (62.8/27.9/9.30) | 6/25/12  (14.0/58.1/27.9) | NA | NA |
|  |  |  | Placebo | 37 | Mean (range): 60 (18-75) | 27 (73.0) | 26/8/3  (70.3/21.6/8.11) | 6/20/11  (16.2/54.1/29.7) | NA | NA |
| Perez-Ayuso et al.28 | NA | Spain | Propranolol | 26 | Mean±SE: 58±2 | 15 (57.7) | Alcoholic: 15 (57.7)  Nonalcoholic: 11 (42.3) | 11/13/2  (42.3/50.0/7.69) | NA | 11 (42.3) |
|  |  |  | Placebo | 28 | Mean±SE: 60±2 | 11 (39.3) | Alcoholic: 12 (42.9)  Nonalcoholic: 16 (57.1) | 11/14/3  (39.3/50.0/10.7) | NA | 12 (42.9) |
| Pomier-  Layrargues et al.29 | July 1982-July 1985 | Canada | Propranolol | 11 | Mean (range): 52 (24-64) | 7 (63.6) | 9/1/1 (81.8/9.09/9.09) | 2/5/4  (18.2/45.5/36.4) | NA | 5 (45.5) |
|  |  |  | Placebo | 8 | Mean (range): 54 (36-76) | 7 (87.5) | 5/1/2 (62.5/12.5/25.0) | 2/5/1  (25.0/62.5/12.5) | NA | 3 (37.5) |
| Sarin et al.30 | October 2004-June 2007 | India | Propranolol | 77 | Mean±SD: 42±13 | 63 (81.8) | 27/42/8  (35.1/54.5/10.4) | NA | NA | 33 (42.9) |
|  |  |  | Placebo | 73 | Mean±SD: 44±13 | 57 (78.1) | 26/38/9  (35.6/52.1/12.3) | NA | NA | 35 (47.9) |
| The PROVA study group31 | November 1985March 1989 | Denmark, Norway | Propranolol | 68 | Mean: 53 | 38 (55.9) | 53/NA/NA (77.9/NA/NA) | NA | NA | 21 (30.9) |
|  |  |  | Control | 72 | Mean: 54 | 53 (73.6) | 63/NA/NA (87.5/NA/NA) | NA | NA | 30 (41.7) |
| Villanueva et al.32 | January 2010-July 2013 | Spain | Carvedilol | 33 | Mean±SD: 60±10 | 59 (59.0) | 19/54/18  (19.0/54/0/18.0) | 80/20/0  (80.0/20.0/0.00) | Mean±SD:  6.6±0.3 | NA |
|  |  |  | Propranolol | 67 |
|  |  |  |  |  |  |  | Alcohol + Viral: 9 (9.00) |  |  |  |
|  |  |  | Placebo | 101 | Mean±SD: 59±11 | 64 (63.0) | 14/59/20  (13.9/58.4/19.8)  Alcohol + Viral: 8 (7.92) | 81/20/0  (80.2/19.8/0.00) | Mean±SD:  6.8±0.3 | NA |
| Villeneuve et al.33 | July 1982-June 1985 | Canada | Propranolol | 42 | Mean±SE: 54±2 | 24 (57.1) | 31/3/8  (73.8/7.14/19.0) | 4/20/18  (9.52/47.6/42.9) | NA | NA |
|  |  |  | Placebo | 37 | Mean±SE: 58±2 | 28 (75.7) | 26/3/8  (70.3/8.11/21.6) | 5/21/11  (13.5/56.8/29.7) | NA | NA |

MELD, model for end-stage liver disease; NA, not available; SD, standard deviation; SE, standard error.

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