**Table G-4. Results data for bivalirudin vs. heparin-based strategy with or without GPI: composite and individual outcomes**

| **Study** | **Study Details** | **Outcome(s)**  **Length of Followup** | **Results Reported by Authors** | |
| --- | --- | --- | --- | --- |
| Antman, 200231  TIMI 8 | RCT  Total N: 133  Poor quality | Primary Composite at 14 days:  Total mortality  Nonfatal MI | UFH | 6/65 |
| Bivalirudin | 2/68 |
| Secondary Composite at 14 days:  Total mortality  Nonfatal MI  Major bleeding | Bivalirudin | OR (95% CI):  0.19 (0.04 to 0.94), reference group UFH |
| Secondary Composite at 30 days:  Total mortality  Nonfatal MI  Major bleeding | Bivalirudin | OR (95% CI):  0.23 (0.06 to 0.85) reference group UFH |
| Primary Composite at 30 days:  Total mortality  Nonfatal MI | UFH | 8/65 |
| Bivalirudin | 3/68 |
| Major bleeding at 14 days | UFH | 3/65 |
| Bivalirudin | 0/68 |
| Chu, 200632 | Observational  Total N: 672  Fair quality | Primary Composite at 30 days:  Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 9/216 |
| UFH | 19/456 |
| Primary Composite at 6 mo:  Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 29/216 |
| UFH | 50/456 |
| Transfusion in hospital | Bivalirudin | 19/216 |
| UFH | 45/456 |
| Stent thrombosis in hospital | Bivalirudin | 1/216 |
| UFH | 6/456 |
| Total mortality at 30 days | Bivalirudin | 7/216 |
| UFH | 9/456 |
| Nonfatal MI at 30 days | Bivalirudin | 1/216 |
| UFH | 5/456 |
| Revascularization at 30 days | Bivalirudin | 2/216 |
| UFH | 6/456 |
| Stent thrombosis at 30 days | Bivalirudin | 0/216 |
| UFH | 1/456 |
| Total mortality at 6 mo | Bivalirudin | 17/216 |
| UFH | 21/456 |
| Nonfatal MI at 6 mo | Bivalirudin | 5/216 |
| UFH | 12/456 |
| Revascularization at 6 mo | Bivalirudin | 10/216 |
| UFH | 20/456 |
| Cortese, 200933 | Observational  Total N: 159  Fair quality | Secondary Composite at 30 days:  Total mortality  Revascularization | UFH + GPI | 5/59 |
| Bivalirudin prolonged | 3/50 |
| Bivalirudin | 5/50 |
| Major bleeding in hospital | UFH + GPI | 5/59 |
| Bivalirudin prolonged | 2/50 |
| Bivalirudin | 0/50 |
| Minor bleeding in hospital | UFH + GPI | 12/59 |
| Bivalirudin prolonged | 2/50 |
| Bivalirudin | 2/50 |
| Nonfatal MI periprocedure | UFH + GPI | 7/59 |
| Bivalirudin prolonged | 4/50 |
| Bivalirudin | 13/50 |
| Nonfatal MI at 30 days | UFH + GPI | 1/59 |
| Bivalirudin prolonged | 1/50 |
| Bivalirudin | 2/50 |
| Total mortality at 30 days | UFH + GPI | 2/59 |
| Bivalirudin prolonged | 1/50 |
| Bivalirudin | 2/50 |
| Revascularization at 30 days | UFH + GPI | 2/59 |
| Bivalirudin prolonged | 1/50 |
| Bivalirudin | 2/50 |
| Stent thrombosis at 30 days | UFH + GPI | 0/59 |
| Bivalirudin prolonged | 0/50 |
| Bivalirudin | 1/50 |
| Gibson, 200634  PROTECT-TIMI-30 | RCT  Total N: 857  Fair quality | Primary Composite at 48 hrs:  Total mortality  Nonfatal MI  Ischemia | Bivalirudin | OR (95% CI): 1.35 (0.91-2.01), reference group eptifibatide |
| Secondary Composite at 48 hrs:  Total mortality  Nonfatal MI | Bivalirudin | OR (95% CI): 1.37 (0.81-2.31), reference group eptifibatide |
| Total mortality at 48 hrs | Bivalirudin | 1/267 |
| Eptifibatide | 0/530 |
| Nonfatal MI at 48 hrs | Bivalirudin | 23/267 |
| Eptifibatide | 35/530 |
| Ischemia on Holt monitoring at 48 hrs | Bivalirudin | 169 min |
| Eptifibatide | 36 min |
| Major Bleeding at 48 hrs | Bivalirudin | 0/282 |
| Eptifibatide | 4/567 |
| Minor Bleeding at 48 hrs | Bivalirudin | 1/282 |
| Eptifibatide | 14/567 |
| Kastrati, 200835  ISAR-REACT 3 | RCT  Total N: 4,571  Good quality | Primary Composite at 30 days:  Total mortality  Nonfatal MI  Revascularization  Major Bleeding | Bivalirudin | 190/2289 |
| UFH | 198/2281 |
| Secondary Composite at 30 days: Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 135/2289 |
| UFH | 114/2281 |
| Secondary Composite at 1 yr: Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 391/2289 |
| UFH | 399/2281 |
| Secondary Composite at 1 yr: Total mortality  Nonfatal MI | Bivalirudin | 176/2289 |
| UFH | 153/2281 |
| Total mortality at 30 days | Bivalirudin | 2/2289 |
| UFH | 5/2281 |
| Nonfatal MI at 30 days | Bivalirudin | 128/2289 |
| UFH | 109/2281 |
| Revascularization at 30 days | Bivalirudin | 18/2289 |
| UFH | 16/2289 |
| Stent Thrombosis at 30 days | Bivalirudin | 11/2289 |
| UFH | 9/2281 |
| Major Bleeding at 30 days | Bivalirudin | 71/2289 |
| UFH | 105/2281 |
| Minor Bleeding at 30 days | Bivalirudin | 30/2289 |
| UFH | 50/2281 |
| Total mortality at 1 yr | Bivalirudin | 43/2289 |
| UFH | 39/2281 |
| Nonfatal MI at 1 yr | Bivalirudin | 137/2289 |
| UFH | 121/2281 |
| Revascularization at 1 yr | Bivalirudin | 256/2289 |
| UFH | 285/2281 |
| Kastrati, 201136  ISAR-REACT 4 | RCT  Total N: 1,721  Good quality | Primary Composite at 30 days:  Total mortality  Nonfatal MI  Revascularization  Major Bleeding | Bivalirudin | 130/860 |
| UFH+GPI | 137/861 |
| Secondary Composite at 30 days: Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 115/860 |
| UFH+GPI | 110/861 |
| Total mortality at 30 days | Bivalirudin | 14/860 |
| UFH+GPI | 12/861 |
| Nonfatal MI at 30 days | Bivalirudin | 98/860 |
| UFH+GPI | 102/861 |
| Stroke at 30 days | Bivalirudin | 6/860 |
| UFH+GPI | 4/861 |
| Revascularization at 30 days | Bivalirudin | 11/860 |
| UFH+GPI | 7/861 |
| Stent Thrombosis at 30 days | Bivalirudin | 6/860 |
| UFH+GPI | 5/861 |
| Major Bleeding at 30 days | Bivalirudin | 22/860 |
| UFH+GPI | 40/861 |
| Minor Bleeding at 30 days | Bivalirudin | 37/860 |
| UFH+GPI | 69/861 |
| Adverse drug reactions at 30 days | Bivalirudin | 0/860 |
| UFH+GPI | 10/861 |
| Lemesle, 200937 | Observational  Total N: 2,766  Fair quality | Primary Composite at 6 mo:  Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 122/1207 |
| UFH | 315/1559 |
| Major bleeding in hospital | Bivalirudin | 27/1207 |
| UFH | 101/1559 |
| Total mortality at 6 mo | Bivalirudin | 106/1207 |
| UFH | 209/1559 |
| Nonfatal MI at 6 mo | Bivalirudin | 29/1207 |
| UFH | 51/1559 |
| Revascularization at 6 mo | Bivalirudin | 29/1207 |
| UFH | 107/1559 |
| Lemesle, 200938 | Observational  Total N: 171  Fair quality | Primary Composite in hospital:  Total mortality  Nonfatal MI  Revascularization  Major bleeding | Bivalirudin | 11/79 |
| UFH | 26/92 |
| Total mortality in hospital | Bivalirudin | 3/79 |
| UFH | 4/92 |
| Nonfatal MI in hospital | Bivalirudin | 1/79 |
| UFH | 2/92 |
| Revascularization in hospital | Bivalirudin | 7/79 |
| UFH | 1/92 |
| Major bleeding in hospital | Bivalirudin | 10/79 |
| UFH | 20/92 |
| Parodi, 201039  ARNO | RCT  Total N: 850  Fair quality | Primary Composite at 30 days:  Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 12/425 |
| UFH | 27/425 |
| Primary Composite at 1 year:  Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 32/425 |
| UFH | 53/425 |
| Total mortality at 30 days | Bivalirudin | 1/425 |
| UFH | 6/425 |
| Nonfatal MI at 30 days | Bivalirudin | 10/425 |
| UFH | 19/425 |
| Revascularization at 30 days | Bivalirudin | 2/425 |
| UFH | 3/425 |
| Stent Thrombosis at 30 days | Bivalirudin | 2/425 |
| UFH | 1/425 |
| Major Bleeding at 30 days | Bivalirudin | 4/425 |
| UFH | 12/425 |
| Minor Bleeding at 30 days | Bivalirudin | 10/425 |
| UFH | 10/425 |
| Net Clinical Benefit at 30 days | Bivalirudin | 14/425 |
| UFH | 33/425 |
| Total mortality at 6 months | Bivalirudin | 5/425 |
| UFH | 10/425 |
| Nonfatal MI at 6 months | Bivalirudin | 14/425 |
| UFH | 24/425 |
| Revascularization at 6 months | Bivalirudin | 17/425 |
| UFH | 24/425 |
| Net Clinical Benefit at 6 months | Bivalirudin | 36/425 |
| UFH | 63/425 |
| Patti, 201240  ARMYDA-7 BIVALVE | RCT  Total N: 401  Good quality | Primary Composite at 30 days:  CV mortality  Nonfatal MI  Revascularization  Stent thrombosis | Bivalirudin | 22/198 |
| UFH | 18/203 |
| CV mortality at 30 days | Bivalirudin | 1/198 |
| UFH | 0/203 |
| Nonfatal MI at 30 days | Bivalirudin | 20/198 |
| UFH | 17/203 |
| Revascularization at 30 days | Bivalirudin | 2/198 |
| UFH | 1/203 |
| Stent thrombosis at 30 days | Bivalirudin | 1/198 |
| UFH | 0/203 |
| Major bleeding at 30 days | Bivalirudin | 1/198 |
| UFH | 2/203 |
| Minor bleeding at 30 days | Bivalirudin | 1/198 |
| UFH | 4/203 |
| Entry-site complications at 30 days | Bivalirudin | 1/198 |
| UFH | 14/203 |
| Rajagopal, 200641  REPLACE-2 ACS Substudy | RCT  Total N: 1,351  Good quality | Primary Composite at 30 days:  Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 58/669 |
| UFH+GPI | 54/682 |
| Secondary Composite at 30 days:  Total mortality  Nonfatal MI  Revascularization  Major Bleeding | Bivalirudin | 66/669 |
| UFH+GPI | 75/682 |
| Secondary Composite at 30 days: Total mortality  Nonfatal MI | Bivalirudin | 48/682 |
| UFH+GPI | 49/669 |
| Secondary Composite at 6 mo: Total mortality  Nonfatal MI | Bivalirudin | 58/669 |
| UFH+GPI | 56/862 |
| Total mortality at 30 days | Bivalirudin | 3/669 |
| UFH+GPI | 3/682 |
| Nonfatal MI at 30 days | Bivalirudin | 48/669 |
| UFH+GPI | 47/682 |
| Revascularization at 30 days | Bivalirudin | 15/669 |
| UFH+GPI | 11/682 |
| Major Bleeding at 30 days | Bivalirudin | 18/669 |
| UFH+GPI | 31/682 |
| Minor Bleeding at 30 days | Bivalirudin | 86/669 |
| UFH+GPI | 183/682 |
| Total mortality at 6 months | Bivalirudin | 6/669 |
| UFH+GPI | 9/682 |
| Nonfatal MI at 6 months | Bivalirudin | 54/669 |
| UFH+GPI | 52/682 |
| Revascularization at 6 months | Bivalirudin | 78/669 |
| UFH+GPI | 57/682 |
| Stone, 200642  ACUITY Study | RCT  Total N: 13,819  Good quality | Primary Composite#1 at 30 days:  Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 360/4612 |
| UFH+GPI | 336/4603 |
| Primary Composite#1 at 1 yr:  Total mortality  Nonfatal MI  Revascularization | Bivalirudin | 747/4612 |
| UFH+GPI | 709/4603 |
| Primary Composite #2 at 30 days:  Total mortality  Nonfatal MI  Revascularization  Major bleeding | Bivalirudin | 466/4612 |
| UFH+GPI | 709/4603 |
| Total mortality at 30 days | Bivalirudin | 74/4612 |
| UFH+GPI | 60/4603 |
| Nonfatal MI at 30 days | Bivalirudin | 249/4612 |
| UFH+GPI | 226/4603 |
| Revascularization at 30 days | Bivalirudin | 111/4612 |
| UFH+GPI | 106/4603 |
| Major Bleeding at 30 days | Bivalirudin | 138/4612 |
| UFH+GPI | 262/4603 |
| Minor Bleeding at 30 days | Bivalirudin | 590/4612 |
| UFH+GPI | 994/4603 |
| Thrombocytopenia at 30 days | Bivalirudin | 457/4612 |
| UFH+GPI | 511/4603 |
| Stent thrombosis at 30 days | Bivalirudin | 11/1128 |
| UFH+GPI | 9/1112 |
| Total mortality at 1 yr | Bivalirudin | 175/4612 |
| UFH+GPI | 180/4603 |
| Revascularization at 1 yr | Bivalirudin | 401/4612 |
| UFH+GPI | 387/4603 |
| Nonfatal MI at 1 yr | Bivalirudin | 360/4612, 401/4612 |
| UFH+GPI | 318/4603, 262/4603 |
| Wolfram, 200343 | Observational  Total N: 3,015  Fair quality | Total mortality in hospital | Bivalirudin | 0/335 |
| UFH+eptifibatide | 0/1340 |
| UFH | 1/1340 |
| Nonfatal MI in hospital | Bivalirudin | 0/335 |
| UFH+eptifibatide | 7/1340 |
| UFH | 4/1340 |
| Neurologic event in hospital | Bivalirudin | 4/335 |
| UFH+eptifibatide | 12/1340 |
| UFH | 17/1340 |
| Abrupt vessel closure in hospital | Bivalirudin | 0/335 |
| UFH+eptifibatide | 4/1340 |
| UFH | 5/1340 |
| Revascularization in hospital | Bivalirudin | 5/335 |
| UFH+eptifibatide | 38/1340 |
| UFH | 32/1340 |
| Non Q wave MI in hospital | Bivalirudin | 55/335 |
| UFH+eptifibatide | 354/1340 |
| UFH | 369/1340 |
| Length of hospital stay | Bivalirudin | Mean (SD)  4.7 (17.3) |
| UFH+eptifibatide | Mean (SD)  12.1 (223.8) |
| UFH | Mean (SD)  3.6 (19.1) |
| Major bleeding in hospital | Bivalirudin | 4/335 |
| UFH+eptifibatide | 42/1340 |
| UFH | 35/1340 |

Abbreviations: CI=confidence interval; CV=cardiovascular; GPI=glycoprotein IIb/IIIa inhibitor; hr=hour/hours; MI=myocardial infarction; mo=month/months; N=number of patients; OR=odds ratio; RCT=randomized controlled trial; UFH=unfractionated heparin; vs=versus; yr=year/years