

## Supplementary material

**Table i.** Search strategy

| Keyword/s                    |   |
|------------------------------|---|
| Post-Menopausal Osteoporosis | "Osteoporosis, Postmenopausal"[Mesh] OR Perimenopausal Bone Loss[tiab] OR Postmenopausal Bone Loss[tiab] OR Postmenopausal Bone Losses[tiab] OR Post-Menopausal Osteoporoses[tiab] OR Post-Menopausal Osteoporosis[tiab] OR Postmenopausal Osteoporosis[tiab] OR Postmenopausal Osteoporoses[tiab] OR Perimenopausal Bone Losses[tiab] OR Postmenopausal Bone Loss[tiab]  |
| Randomized Clinical Trials   | "randomized controlled trial"[pt] OR "controlled clinical trial"[pt] OR "randomized controlled trials as topic"[mh] OR "clinical trials as topic"[mh] OR "controlled clinical trials as topic"[mh] OR placebos[mh] OR "random allocation"[mh] OR "double-blind method"[mh] OR randomized[tiab] OR placebo[tiab] OR randomization[tiab] OR randomly allocated[tiab] OR ((double[tw] OR treble[tw] OR triple[tw]) AND (mask* [tw] OR blind* [tw])) OR "randomized controlled trial"[tiab] OR "randomized controlled trials"[tiab] OR "randomized controlled trial"[tiab] OR RCT[tiab] OR "randomized clinical trials"[tiab] OR "randomized clinical trial"[tiab] OR "clinical trials"[tiab] OR "controlled clinical trials" [tiab] OR "controlled clinical trial"[tiab] |
| Alendronate                  | "Alendronate"[Mesh] OR Alendronate[tiab]  |
| Raloxifene                   | "Raloxifene Hydrochloride"[Mesh] OR Raloxifene[tiab] OR Keoxifene[tiab] OR Raloxifene Hydrochloride[tiab] OR Keoxifene Hydrochloride[tiab] OR Evista[tiab]  |
| Denosumab                    | "denosumab" [Supplementary Concept] OR denosumab[tiab]  |
| Parathyroid Hormone          | "Parathyroid Hormone"[Mesh] OR Parathyroid Hormone[tiab] OR Parathormone[tiab] OR Parathyrin[tiab]  |
| Ibandronate                  | "ibandronic acid" [Supplementary Concept] OR ibandronate[tiab]  |
| Risedronate                  | "risedronic acid" [Supplementary Concept] OR risedronic acid[tiab] OR risedronate[tiab]   |
| Clodronate                   | "Clodronic Acid"[Mesh] OR Clodronic Acid[tiab] OR clodronate[tiab]  |
| Etidronate                   | "Etidronic Acid"[Mesh] OR Etidronic Acid[tiab] OR etidronate[tiab]  |
| Zoledronic Acid              | "zoledronic acid" [Supplementary Concept] OR zoledronic acid[tiab]  |
| Strontium Ranelate           | "strontium ranelate" [Supplementary Concept] OR strontium ranelate[tiab]  |

**Table ii.** The efficacy and safety of agents for post-menopausal osteoporosis according to the network meta-analysis represented by odds ratio (OR) and 95% confidence interval (CI). In the lower half of the table, row treatments are compared against column treatments, whereas in the upper half, column treatments are compared against row treatments

| Outcome |     | AEs                           |                               |                               |                              |                              |                              |                              |                              |                              |                              |                              |
|---------|-----|-------------------------------|-------------------------------|-------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
|         | PLA | ALE                           | COL                           | DEN                           | ETI                          | IBA                          | PTH                          | RAL                          | RIS                          | STR                          | ZOL                          |                              |
| NVF     | PLA | 0.93<br>(0.70 to 1.25)        | 1.35<br>(0.88 to 2.06)        | 0.93<br>(0.74 to 1.19)        | 1.20<br>(0.63 to 2.28)       | 1.16<br>(0.87 to 1.55)       |                              | 0.97<br>(0.65 to 1.45)       | 1.18<br>(0.83 to 1.63)       | 1.07<br>(0.75 to 1.52)       | 1.39<br>(0.92 to 2.03)       |                              |
|         | ALE | <b>0.51</b><br>(0.40 to 0.62) | 1.45<br>(0.86 to 2.42)        | 1.00<br>(0.69 to 1.45)        | 1.30<br>(0.62 to 2.57)       | 1.24<br>(0.82 to 1.86)       |                              | 1.04<br>(0.73 to 1.49)       | 1.27<br>(0.80 to 1.93)       | 1.15<br>(0.79 to 1.80)       | 1.49<br>(0.89 to 2.43)       |                              |
|         | COL | 0.94<br>(0.30 to 0.77)        | <b>COL</b><br>(0.56 to 1.56)  | 0.69<br>(0.43 to 1.14)        | 0.88<br>(0.41 to 1.91)       | 0.85<br>(0.52 to 1.43)       |                              | 0.71<br>(0.40 to 1.30)       | 0.87<br>(0.50 to 1.48)       | 0.79<br>(0.46 to 1.39)       | 1.02<br>(0.57 to 1.82)       |                              |
|         | DEN | <b>0.31</b><br>(0.23 to 0.42) | <b>0.61</b><br>(0.42 to 0.89) | 0.65<br>(0.38 to 1.17)        | 1.29<br>(0.65 to 2.54)       | 1.25<br>(0.88 to 1.69)       |                              | 1.04<br>(0.66 to 1.66)       | 1.26<br>(0.83 to 1.87)       | 1.16<br>(0.75 to 1.72)       | 1.49<br>(0.92 to 2.31)       |                              |
|         | ETI | <b>0.24</b><br>(0.14 to 0.39) | <b>0.47</b><br>(0.25 to 0.82) | <b>0.50</b><br>(0.38 to 1.35) | <b>ETI</b><br>(0.38 to 1.35) | 0.97<br>(0.48 to 1.93)       |                              | 0.80<br>(0.38 to 1.71)       | 0.98<br>(0.52 to 1.82)       | 0.89<br>(0.44 to 1.86)       | 1.15<br>(0.54 to 2.47)       |                              |
|         | IBA | <b>0.49</b><br>(0.38 to 0.62) | 1.03<br>(0.55 to 1.74)        | 1.58<br>(1.06 to 2.27)        | 1.12<br>(0.64 to 2.62)       | 1.21<br>(0.36 to 0.96)       |                              | 0.84<br>(0.52 to 1.36)       | 1.02<br>(0.65 to 1.55)       | 0.93<br>(0.59 to 1.47)       | 1.20<br>(0.73 to 1.96)       |                              |
|         | PTH | <b>0.29</b><br>(0.16 to 0.45) | <b>0.59</b><br>(0.29 to 0.97) | 0.64<br>(0.22 to 1.21)        | 0.96<br>(0.50 to 1.56)       | 1.21<br>(0.64 to 2.62)       | <b>PTH</b><br>(0.36 to 0.96) |                              |                              |                              |                              |                              |
|         | RAL | <b>0.57</b><br>(0.44 to 0.69) | 1.11<br>(0.82 to 1.52)        | 1.18<br>(0.72 to 2.02)        | 1.84<br>(1.28 to 2.60)       | 2.44<br>(0.84 to 1.61)       | 1.15<br>(0.84 to 1.61)       |                              | <b>RAL</b><br>(1.19 to 3.73) | 1.22<br>(0.71 to 2.01)       | 1.11<br>(0.65 to 1.87)       | 1.42<br>(0.80 to 2.48)       |
|         | RIS | <b>0.48</b><br>(0.40 to 0.59) | 0.97<br>(0.76 to 1.23)        | 1.01<br>(0.63 to 1.77)        | 1.57<br>(1.09 to 2.25)       | 2.07<br>(1.15 to 3.85)       | 0.98<br>(0.74 to 1.39)       |                              | 0.86<br>(1.04 to 3.24)       | <b>RIS</b><br>(1.04 to 3.24) | 0.91<br>(0.57 to 1.51)       | 1.17<br>(0.70 to 2.01)       |
|         | STR | <b>0.75</b><br>(0.58 to 0.97) | <b>1.49</b><br>(1.06 to 1.98) | 1.62<br>(0.88 to 2.60)        | 2.41<br>(1.62 to 3.48)       | 3.28<br>(1.75 to 5.70)       | 1.56<br>(1.08 to 2.13)       |                              | 1.32<br>(1.54 to 4.58)       | 1.54<br>(1.12 to 2.21)       | <b>STR</b><br>(1.12 to 2.21) | 1.29<br>(0.76 to 2.15)       |
|         | ZOL | <b>0.28</b><br>(0.20 to 0.37) | <b>0.55</b><br>(0.38 to 0.79) | 0.57<br>(0.33 to 1.08)        | 0.91<br>(0.59 to 1.37)       | 1.21<br>(0.63 to 2.28)       | 0.58<br>(0.38 to 0.84)       |                              | 0.51<br>(0.33 to 0.68)       | 0.58<br>(0.39 to 0.83)       | 0.37<br>(0.25 to 0.54)       | <b>ZOL</b><br>(0.25 to 0.54) |
|         | CVF |                               |                               |                               |                              |                              |                              |                              |                              |                              |                              |                              |
| SAEs    | PLA | 0.57<br>(0.16 to 2.36)        | 0.72<br>(0.16 to 3.29)        | 0.48<br>(0.22 to 0.96)        | 0.51<br>(0.18 to 1.51)       | 0.44<br>(0.09 to 2.07)       |                              | 0.53<br>(0.13 to 1.76)       |                              |                              | 0.25<br>(0.08 to 0.92)       |                              |
|         | ALE | <b>ALE</b><br>(0.44 to 3.04)  | 1.27<br>(0.15 to 8.61)        | 0.85<br>(0.16 to 3.50)        | 0.92<br>(0.15 to 4.44)       | 0.77<br>(0.08 to 5.20)       |                              | 0.92<br>(0.15 to 3.81)       |                              |                              | 0.44<br>(0.07 to 2.67)       |                              |
|         | COL | 0.86<br>(0.56 to 1.69)        | <b>COL</b><br>(0.28 to 2.54)  | 0.66<br>(0.12 to 3.53)        | 0.71<br>(0.11 to 4.59)       | 0.60<br>(0.06 to 5.50)       |                              | 0.72<br>(0.09 to 4.92)       |                              |                              | 0.35<br>(0.05 to 2.79)       |                              |
|         | DEN | 1.21<br>(0.95 to 1.62)        | 1.23<br>(0.69 to 2.34)        | <b>DEN</b><br>(0.12 to 3.53)  | 1.08<br>(0.31 to 4.04)       | 0.91<br>(0.15 to 5.38)       |                              | 1.11<br>(0.24 to 4.59)       |                              |                              | 0.52<br>(0.14 to 2.44)       |                              |
|         | IBA | 1.07<br>(0.72 to 1.51)        | 1.09<br>(0.56 to 2.05)        | 0.88<br>(0.55 to 1.28)        | <b>IBA</b><br>(0.31 to 4.04) | 0.85<br>(0.12 to 5.43)       |                              | 1.02<br>(0.17 to 4.77)       |                              |                              | 0.48<br>(0.11 to 2.60)       |                              |
|         | PTH |                               |                               |                               |                              | <b>PTH</b><br>(0.14 to 8.84) |                              | 1.21<br>(0.45 to 6.16)       |                              |                              | 0.57<br>(0.09 to 4.84)       |                              |
|         | RAL | 0.57<br>(0.17 to 1.91)        | 0.58<br>(0.15 to 2.15)        | 0.47<br>(0.14 to 1.60)        | 0.54<br>(0.15 to 1.89)       | 0.54<br>(0.15 to 1.89)       |                              | <b>RAL</b><br>(0.45 to 5.69) |                              |                              | 0.47<br>(0.10 to 3.50)       |                              |
|         | RIS | 0.93<br>(0.64 to 1.27)        | 0.95<br>(0.28 to 2.18)        | 0.76<br>(0.48 to 1.12)        | 0.87<br>(0.47 to 1.12)       | 0.87<br>(0.54 to 1.43)       |                              | <b>RIS</b><br>(0.48 to 6.99) |                              |                              |                              |                              |
|         | STR | 1.05<br>(0.59 to 1.83)        | 1.07<br>(0.29 to 2.75)        | 0.86<br>(0.48 to 2.35)        | 0.98<br>(0.44 to 1.97)       | 0.98<br>(0.50 to 1.97)       |                              | 1.83<br>(0.60 to 2.26)       |                              | <b>STR</b><br>(0.60 to 2.26) |                              |                              |
|         | ZOL | 0.95<br>(0.59 to 1.51)        | 0.96<br>(0.28 to 2.32)        | 0.78<br>(0.44 to 2.01)        | 0.89<br>(0.51 to 1.62)       | 0.89<br>(0.51 to 1.62)       |                              | 1.66<br>(0.43 to 1.92)       |                              | 0.91<br>(0.43 to 1.92)       | <b>ZOL</b><br>(0.43 to 1.92) |                              |

PLA, placebo; ALE, alendronate; COL, clodronate; DEN, denosumab; ETI, etonate; IBA, ibandronate; PTH, parathyroid hormone; RAL, raloxifene; RIS, risendronate; STR, strontium ranelate; ZOL, zoledronic acid; NVF, new vertebral fractures; CVF, clinical vertebral fractures; AEs, adverse events; SAEs, serious adverse events; NVF, new vertebral fracture; CVF, clinical vertebral fracture; SAE, serious adverse event; AE, adverse event