Supplementary Table S3. Additional information on ICIs-induced musculoskeletal adver events described as symptoms or disease summary descriptions.

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| **ICIs** | **AEs** | **Cases (N)** |
| Atezolizumab | joint swelling | 5 |
| joint dislocation | 4 |
| joint effusion | 4 |
| joint range of motion decreased | 3 |
| joint irrigation | 2 |
| joint stiffness | 2 |
| muscle rigidity | 5 |
| muscle haemorrhage | 2 |
| haematoma muscle | 1 |
| muscle swelling | 1 |
| musculoskeletal pain | 21 |
| musculoskeletal stiffness | 14 |
| musculoskeletal discomfort | 2 |
| spinal pain | 8 |
| spinal disorder | 1 |
| bone pain | 23 |
| bone disorder | 8 |
| Avelumab | muscle disorder | 1 |
| musculoskeletal pain | 1 |
| joint swelling | 5 |
| joint dislocation | 4 |
| joint effusion | 4 |
| joint range of motion decreased | 3 |
| joint irrigation | 2 |
| joint stiffness | 2 |
| bone pain | 1 |
| spinal disorder | 6 |
| Cemiplimab | joint swelling | 2 |
| musculoskeletal pain | 2 |
| musculoskeletal stiffness | 2 |
| Durvalumab | joint swelling | 11 |
| joint stiffness | 1 |
| joint warmth | 1 |
| musculoskeletal chest pain | 6 |
| musculoskeletal stiffness | 8 |
| musculoskeletal pain | 4 |
| musculoskeletal disorder | 1 |
| muscle disorder | 1 |
| muscle haemorrhage | 1 |
| bone pain | 7 |
| bone disorder | 1 |
| spinal pain | 1 |
| spinal disorder | 1 |
| Ipilimumab | musculoskeletal pain | 6 |
| musculoskeletal stiffness | 5 |
| musculoskeletal chest pain | 3 |
| muscle twitching | 5 |
| extraocular muscle disorder | 3 |
| muscle disorder | 3 |
| muscle injury | 1 |
| joint swelling | 6 |
| joint effusion | 2 |
| joint injury | 2 |
| joint stiffness | 2 |
| bone pain | 3 |
| Nivolumab | joint swelling | 178 |
| joint stiffness | 33 |
| joint effusion | 14 |
| joint injury | 9 |
| joint dislocation | 8 |
| joint abscess | 3 |
| joint lock | 2 |
| joint range of motion decreased | 2 |
| musculoskeletal pain | 297 |
| musculoskeletal stiffness | 127 |
| musculoskeletal chest pain | 68 |
| musculoskeletal discomfort | 14 |
| musculoskeletal disorder | 12 |
| muscle disorder | 21 |
| muscle tightness | 20 |
| muscle twitching | 15 |
| muscle strain | 10 |
| muscle fatigue | 8 |
| muscle necrosis | 7 |
| muscle rigidity | 6 |
| muscle discomfort | 5 |
| muscle injury | 5 |
| extraocular muscle paresis | 4 |
| muscle spasticity | 4 |
| extraocular muscle disorder | 3 |
| muscle swelling | 3 |
| respiratory muscle weakness | 3 |
| diaphragm muscle weakness | 2 |
| muscle enzyme increased | 2 |
| muscle strength abnormal | 2 |
| muscle tone disorder | 2 |
| muscle abscess | 1 |
| muscle contractions involuntary | 1 |
| muscle haemorrhage | 1 |
| smooth muscle antibody positive | 1 |
| bone disorder | 8 |
| spinal pain | 49 |
| spinal disorder | 22 |
| spinal deformity | 6 |
| spinal instability | 5 |
| Pembrolizumab | joint swelling | 47 |
| joint effusion | 9 |
| joint stiffness | 7 |
| joint dislocation | 5 |
| joint range of motion decreased | 4 |
| joint injury | 3 |
| joint contracture | 2 |
| joint fluid drainage | 2 |
| joint instability | 2 |
| joint arthroplasty | 1 |
| joint hyperextension | 1 |
| musculoskeletal pain | 85 |
| musculoskeletal stiffness | 29 |
| musculoskeletal chest pain | 19 |
| musculoskeletal disorder | 16 |
| musculoskeletal discomfort | 13 |
| muscle disorder | 28 |
| muscle twitching | 9 |
| muscle strain | 6 |
| extraocular muscle paresis | 5 |
| muscle injury | 4 |
| muscle tightness | 4 |
| extraocular muscle disorder | 3 |
| muscle haemorrhage | 3 |
| muscle rupture | 3 |
| diaphragm muscle weakness | 2 |
| muscle contractions involuntary | 2 |
| muscle fatigue | 2 |
| muscle rigidity | 2 |
| respiratory muscle weakness | 2 |
| muscle hypertrophy | 1 |
| muscle strength abnormal | 1 |
| smooth muscle antibody positive | 1 |
| muscle necrosis | 4 |
| spinal pain | 11 |
| spinal disorder | 5 |
| spinal deformity | 2 |
| bone pain | 55 |
| bone disorder | 9 |
| bone swelling | 2 |