**Supplemental material**

**Suppl 1.**

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| **Appendix 1. Surgical procedure ICD-9-CM codes** |
| **Type of surgery** | **ICD-9-CM codes** |
| **Gastrointestinal Surgeries** |  |
| 1-Hemicolectomy | 4573, 4575, 1733. |
| 2-Appendectomy | 470, 4701, 4709, 471, 4711 4719. |
| 3-Cholecystectomy and common bile duct exploration | 5121, 5122, 5123, 5124, 5141, 5142, 5143, 5149, 5151, 5159. |
| **Orthopedic Surgeries** |  |
| 4-Hip replacement | 0070, 0071, 0072, 0073, 0074, 0075, 0076, 0077, 0085, 0086, 0087, 8151, 8152, 8153, 8169. |
| 5-Knee replacement | 0080, 0081, 0082, 0083, 0084, 8141, 8142, 8143, 8144, 8146, 8147, 8154, 8155. |
| 6-Treatment, fracture or dislocation of lower extremity (hip or femur) | 7855, 7865, 7905, 7915, 7925, 7935, 7945, 7955, 7965, 7975, 7985, 7995. |
| 7-Amputation of lower extremity | 8410, 8411, 8412, 8413, 8414, 8415, 8416, 8417, 8418, 8419. |
| **Spine surgeries** |  |
| 8-Laminectomy, excision intervertebral disc | 0302, 0309, 805, 8050, 8051, 8059, 8459, 8460, 8461, 8462, 8463, 8464,8465, 8466, 8467, 8468, 8469, 8480, 8481, 8482, 8483, 8484, 8485. |
| 9-Spine fusion | 8100, 8101, 8102, 8103, 8104, 8105, 8106, 8107, 8108, 8109, 8130, 8131, 8132, 8133, 8134, 8135, 8136, 8137, 8138, 8139, 8161, 8162, 8163, 8164, 8451. |
|  **Gynecological surgery** |  |
| 10-Hysterectomy, abdominal and vaginal | 683, 6831, 6839, 684, 6841, 6849, 685, 6851, 6859, 686, 6861, 6869, 687, 6871, 6879, 689. |

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| **Appendix 2. ICD-9 Code descriptions** |
| **Complication** | **ICD-9-CM** | **Description** |
|  **Cardiovascular** | 997.1 | Cardiac complications, not elsewhere specified |
|   | 997.2 | Peripheral vascular complications, not elsewhere specified |
|   | 997.79 | Vascular complications of other vessels |
|   | 998.0 410.0-410.9 | Cardiac complications, acute myocardial infarction |
| **Pulmonary** | 512.1 | Pneumothorax |
|   | 518.4 | Acute edema of lung, unspecified |
|   | 518.5 | Pulmonary insufficiency following trauma and surgery |
|   | 997.3 | Respiratory complications not elsewhere classified |
|   | 415.1 | Respiratory complications, pulmonary embolism |
| **Post-Operative Infection** | 998.5, 999.3  | Postoperative infections |
|  | 998.51 | Infected postoperative seroma |
|  | 599.0 | Urinary tract infection |
|  | 998.59 | Other postoperative infection (abscess) |
|  | 995.91 | Sepsis |
| **Gastrointestinal**  |  |  |
|  | 560.1 | Post-operative ileus  |
|  | 557.0 | Acute Ischemic colitis |
|  | 008.45 | Pseudomembranous colitis |
|  | 997.4 997.41 997.49 | Gastrointestinal complications not elsewhere classified |
| **Renal**  |  |  |
|  | 584 | Acute Renal failure |
|  |  | 590.1, 590.2, 590.8, 590.9, 591, 593.3, 593.4, 593.5, 593.81, 593.82, 595.89, 596.1, 596.2, 596.6, 997.5 |
| **Perioperative stroke** |   | 433.01, 433.11, 433.21, 433.31, 433.81, 433.91, 434.00, 434.01, 434.10, 434.11, 434.90, 434.91, 436, 430, 431, 432.0, 432.1, 432.9, 997.02 |