Supplemental Table 1. Diagnosis codes used to identify comorbidities and immunosuppressive conditions.

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|  | ICD-9-CM code(s) | ICD-10-CM code(s) |
| Comorbiditiesa |  |  |
| History of MI | 412 | I25.2 |
| Congestive heart failure | 428.0 – 428.9 | I50.1 – I50.9 |
| Cerebrovascular disease | 438.0 – 438.9 | I69.00 – I69.998 |
| Dementia | 290.0 – 290.9 | F01.5 – F03.91 |
| Rheumatic disease | 710.0, 710.1, 710.4, 714.0 – 714.2, 714.81, 725 | M05.00 – M05.9, M06.00 – M06.9 |
| Peptic ulcer disease | 531.4 – 531.7, 532.4 – 532.7, 533.4 – 533.7, 534.4 – 534.7 | K25.4 – K25.7, K26.4 – K26.7, K27.4 – K27.7, K28.4 – K28.7 |
| Mild liver disease | 571.2, 571.4 – 571.6 | K70.30, K70.31, K74.0, K74.3, K74.4, K74.5, K74.60, K74.69 |
| Moderate or severe liver disease | 572.2 – 572.8 | K72.10, K72.90, K72.91, K76.6, K76.7 |
| Diabetes without chronic complications | 250.0 – 250.3, 250.7 | E10.10, E10.11, E10.61 – E10.69, E10.8, E10.9, E11.00, E11.01, E11.10, E11.11, E11.61 – E11.69, E11.8, E11.9, E12.00, E12.01, E12.10, E12.11, E12.61 – E12.69, E12.8, E12.9, E13.00, E13.01, E13.10, E13.11, E13.61 – E13.69, E13.8, E13.9, E14.00, E14.01, E14.10, E14.11, E14.61 – E14.69, E14.8, E14.9 |
| Diabetes with chronic complication | 250.4 –250.6 | E10.21 – E10.29, E10.31 – E10.39, E10.40 – E10.49, E10.51 – E10.59, E10.71 – E10.79, E11.21 – E11.29, E11.31 – E11.39, E11.40 – E11.49, E11.51 – E11.59, E11.71 – E11.79, E12.21 – E12.29, E12.31 – E12.39, E12.40 – E12.49, E12.51 – E12.59, E12.71 – E13.79, E13.21 – E13.29, E13.31 – E13.39, E13.40 – E13.49, E13.51 – E13.59, E13.71 – E13.79, E14.21 – E14.29, E14.31 – E14.39, E14.40 – E14.49, E14.51 – E14.59, E14.71 – E14.79 |
| Hemiplegia or paraplegia | 342.0 – 342.9, 344.1 | G81.0 – G82.54 |
| Renal disease | 582.0 – 582.9, 583.0 – 583.7, 585.1 – 585.9, 586, 588.0 – 588.9 | N03.0 – N03.9, N05.0 – N05.9, N18.1 – N18.9, N19, N25.0 – N25.9 |
| Chronic pulmonary conditionsb |  |  |
| Chronic bronchitis/emphysema | 490, 491.0 – 491.9, 492.0, 492.8 | J40 – J44.1 |
| Asthma | 493.0 – 493.92 | J45.20 – J45.998 |
| Bronchiectasis | 494.0, 494.1 | J47.0 – J47.9 |
| Other/unspecified COPD | 496 | J44.9 |
| Immunosuppressive conditions |  |  |
| HIV/AIDS | 042, 079.53 | B20 |
| Neutropenia | 288.00 – 288.9 | D70.0 – D70.9 |
| Organ transplant | 996.80 – 996.99, V42.0 – V42.9 | T86.00 – T86.99, Z94.0 – Z94.9 |
| Hematological malignancy | 200.0 – 208.92 | C81. 00 – C96.9 |
| Solid malignancy | 140.0 – 199.2, 209.0 – 209.79, 235.0 – 239.9 | C00.0 – C80.2, C7A, C7B, D37.01 – D49.9 |
| Rheumatologic/inflammatory condition | 135, 277.30 – 277.39, 340, 341.0 – 341.9, 357.0 – 357.9, 422.0 – 422.99, 446.0 – 446.7, 495.9, 516.0 – 516.9, 555.0 – 558.9, 695.4, 710.0 – 712.99, 714.0 – 714.9, 720.0 – 720.9 | D86.0 – D86.9, E10.40, E10.42, E11.40, E11.42, E12.40, E12.42, E13.40, E13.42, E14.40, E14.42, E85.0 – E85.9, G35, G36.0 – G36.9, G61.0 – G65.2, I40.0 – I40.9, I41, J67.9, J84.01 – J84.09, K50.00 – K52.9, K55.0 – K55.9, L93.0, L93.2, M00.00 – M00.9, M01.X0 0 M01.X9, M02.10 – M02.19, M02.30 – M02.39, M04.1, M05.00 – M05.9, M06.00 – M06.9, M08.00 – M08.99,M11.00 – M11.9, M12.00 – M12.09, M30.0 – M30.8, M32.0 – M34.9, M35.00 – M35.3, M35.8, M35.9, M45.0 – M46.1, M46.50 – M46.59, M46.80 – M46.99, M49.80 – M49.89 |
| Other immune conditions | 279.0 – 279.9, 288.0 – 288.2, 288.50 – 279.59, 288.8, 288.9, 288.00 – 288.9, 289.83, 289.89, 289.9, 795.71, 795.79 | D47.4, D71, D72.0, D72.810 – D72.819, D72.89, D72.9, D75.81, D75.89, D75.9, D80.0 – D80.9, D89.2, R75, R76.0, R76.8, R76.9 |
| Trauma | 800.0 – 959.9 | S00.00XA – T34.99XS, T79.0XXA – T79.9XXS |
| Abbreviations; ICD-9-CM, International Classification of Diseases, 9th edition, Clinical modification; ICD-10-CM, International Classification of Diseases, 10th edition, Clinical modification; CCI, Charlson Comorbidity Index; MI, myocardial infarction: HIV/AIDS, human immunodeficiency virus/acquired immunodeficiency syndromea Only codes which could be applied to the index hospitalization were used; e.g. history of MI (ICD-9-CM 412) was included, but acute MI (ICD-9-CM 410-410.92) was excludedb Chronic obstructive pulmonary disease (COPD) from Charlson Comorbidity Index was broken into more granular categories for analysis |

Supplemental Table 2. Generic medication names used to classify medications of interest.

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|  | Generic medication name(s) |
| Antibiotics, systemic |  |
| β-lactams | Amoxicillin, Ampicillin, Benzathine penicillin, Dicloxacillin, Nafcillin, Oxacillin, Penicillin G, Penicillin V, PiperacillinCefaclor, Cefadroxil, Cefazolin, Cefdinir, Cefepime, Cefixime, Cefotetan, Cefoxatime, Cefoxitin, Cefpodoxime, Ceftriaxone, Ceftaroline, Ceftazidime, Cefuroxime, Cephalexin, Cepodoxime proxetilAztreonam Ertapenem, Imipenem, MeropenemAvibactam, Clavulanic acid, Sulbactam Ampicillin/Sulbactam, Amoxicillin/Clavulanate, Ceftolozane/tazobactam, Piperacillin/TazobactamColistin (colistamethate sodium), Daptomycin, Ethambutol, Isoniazid, Polymyxin B, Pyrazinamide, Metronidazole  |
| Aminoglycosides | Amikacin, Gentamicin, Neomycin, Paromomycin, Tobramycin |
| Chloramphenicol | Chloramphenicol |
| Glycopeptides | Telavancin, Vancomycin |
| Macrolides | Azithromycin, Clarithromycin, Erythromycin, Fidaxomicin, Telithromycin |
| Oxazolidinones | Linezolid, Tedizolid  |
| Quinolones | Ciprofloxacin, Levofloxacin, Moxifloxacin, Ofloxacin |
| Rifaximin | Rifaximin |
| Sulfonamides | Sulfadiazine, Sulfamethoxazole, Trimethoprim  |
| Tetracyclines | Doxycycline, Minocycline, Rifampin, Tetracycline, Tigecycline |
| Lincosamides | Clindamycin |
| Lipopeptides | Daptomycin |
| Nitrofurans | Nitrofuratoin |
| Anesthetics |  |
| General | Dexmedetomidine, Etomidate, Ketamine, Midazolam, Propofol |
| Local | Benzocaine, Bupivacaine, Chloroprocaine, Lidocaine, Ropivacaine, Tetracaine |
| Antipsychotics/neuroleptics | Amitriptyline, Aripiprazole, Chlorpromazine, Clozapine, Desipramine, Doxepin, Droperidol, Fluphenazine, Haloperidol, Imipramine, Lurasidone, Nortriptyline, Olanzapine, Paliperidone, Paroxetine, Perphenazine, Prochlorperazine, Promazine, Promethazine, Protriptyline, Quetiapine, Risperidone, Thioridazine, Thiothixene, Trifluoperazine, Ziprasidone |
| Benzodiazepines | Alprazolam, Chlordiazepoxide, Clobazam, Clomipramine, Clonazepam, Clorazepate, Diazepam, Flurazepam, Lorazepam, Midazolam, Oxazepam, Temazepam |
| Histamine 2-agonists | Cimetidine, Famotidine, Ranitidine |
| Proton pump inhibitors | Dexlansoprazole, Esomeprazole, Lansoprazole, Omeprazole, Pantoprazole |
| Opioids | Buprenorphine, Codeine, Fentanyl, Hydromorphone, Meperidine, Methadone, Morphine, Nalbuphine, Oxycodone, Oxymorphone, Sufentanil, Tapentadol, Tramadol |
| Immunosuppressive medicationsa |  |
| Chemotherapeutic agents (alkylating) | Bendamustine hydrochloride, Busulfan, Carmustine, Cyclophosphamide, Darabazine, Ifosfamide, Melphalan, Thiotepa |
| Chemotherapeutic agents (antibiotics) |  Bleomycin sulfate, Dactinomycin, Daunorubicin, Doxorubicin, Epirubicin, Idarubicin |
| Chemotherapeutic agents (antimetabolites) | Capecitabine, Cladribine, Clofarabine, Cytarabine, Fludarabine, Fluorouracil, Gemcitabine, Mercaptopurine, Methotrexate, Pemetrexed, Pentostatin |
| Chemotherapeutic agents (antimitotics) |  Docetaxel, Paclitaxel, Vinblastine, Vincristine, Vinorelbine |
| Chemotherapeutic agents (monoclonal antibodies) | Alemtuzumab, Bevacizumab, Cetuximab, Gemtuzumab,  Ofatumumab, Rituximab |
| Chemotherapeutic agents(other) | Aldesleukin, Arsenic trioxide, Asparaginase, Azacitidine, Brentuximab vedotin, Bortezomib, Carboplatin, Carfilzomib, Cisplatin, Dasatinib, Decitabine, Erlotinib, Etoposide, Everolimus, Imatinib, Irinotecan, Lapatinib, Mitoxantrone, Nelarabine, Nilotinib, Oxaliplatin, Pazopanib, Pegaspargase, Pralatrexate, Procarbazine, Romidepsin, Sorafenib, Sunitinib, Temozolomide, Temsirolimus, Topotecan, Tretinoin, Vorinostat |
| Immune-modulating agents | Abatacept, Adalimumab, Alefacept, Anakinra, Azathioprine, Basiliximab, Belatacept, Belimumab, Certolizumab pegol, Cyclosporine, Daclizumab, Denosumab, Eculizumab, Efalizumab, Etanercept, Fingolimod, Glatiramer, Golimumab, Infliximab, Interferon alfa-2a, Interferon alfa-2b, Interferon alfa-n3, Interferon alfacon-1, Interferon beta-1a, Interferon beta-1b, Interferon gamma-1b, Leflunomide, Lenalidomide, Muromonab-CD3, Mycophenolate acid, Mycophenolate mofetil, Natalizumab, Palifermin, Palivizumab, Pomalidomide, Pegademase bovine, Peginterferon alfa-2a, Peginterferon alfa-2b, Sirolimus, Tacrolimus, Tocilizumab, Ustekinumab |
| Systemic corticosteroids | Betamethasone, Budesonide, Dexamethasone, Hydrocortisone, Methylprednisolone, Prednisolone, Triamcinolone |
| a Immunosuppressive medication use within the first 2 days of hospitalization were used to identify immunocompromised patients |