Title "Medications present at admission";

**data** admitdate;

set covid.covid\_allpersons;

keep osler\_id admit\_time;

**run**;

**proc** **sort** data=test.derived\_med\_orders out=all\_meds; by osler\_id;

**proc** **sort** data=admitdate; by osler\_id; **run**;

**data** covid.meds\_at\_admission;

merge all\_meds admitdate;

by osler\_id;

if admit\_time=**.** then delete; /\*these are people in the hospital but not with COVID\*/

if discon\_time ne **.** and discon\_time < admit\_time then delete; /\*discontinued before COVID hospitalization\*/

if ordering\_dttm >= (admit\_time + **21600**) then delete; /\*ordered within 6 hours (60 seconds per minute \* 60 minutes per hour \* 6 hours) of admission\*/

**run**;

Title "EXPOSURE DEFINITION: immunocompromised persons on admission to hospital";

/\*NOTE this definition is more comprehensive than selective immunosuppressants and corticosteroids used in the HCQ analyses\*/

/\*On September 2, noticed the "Current\_med\_yn" filter changed so we have to instead consider stop date and admission date for present at admission\*/

**data** immuno\_meds;

set covid.meds\_at\_admission;

if med\_name in:(

/\*ATC CODE L04AA - SELECTIVE IMMUNOSUPPRESSANTS\*/ 'MUROMONAB-CD3', 'ANTILYMPHOCYTE IMMUNOGLOBULIN (HORSE)', 'ANTITHMYOCYTE IMMUNOGLOBULIN (RABBIT)', 'MYCOPHENOLIC ACID'

'MYCOPHENOLATE SODIUM', 'MYCOPHENOLATE MOFETIL', 'SIROLIMUS', 'LEFLUNOMIDE', 'ALEFACEPT', 'EVEROLIMUS', 'GUSPERIMUS', 'EFALIZUMAB', 'ABETIMUS',

'NATALIZUMAB', 'ABATACEPT', 'ECULIZUMAB', 'BELIMUMAB', 'FINGOLIMOD', 'BELATACEPT', 'TOFACITINIB', 'TERIFLUNOMIDE', 'APREMILAST', 'VEDOLIZUMAB',

'ALEMTUZUMAB', 'BEGELOMAB', 'OCRELIZUMAB', 'BARICITINIB', 'OZANIMOD', 'EMAPALUMAB', 'CLADRIBINE', 'IMLIFIDASE', 'SIPONIMOD', 'RAVULIZUMAB', 'UPADACITINIB'

/\*ATC CODE L04AB - TNF ALPHA INHIBITORS\*/ 'ETANERCEPT', 'INFLIXIMAB', 'AFELIMOMAB', 'ADALIMUMAB', 'CERTOLIZUMAB PEGOL', 'GOLIMUMAB', 'OPINERCEPT'

/\*ATC CODE L04AC - INTERLEUKIN INHIBITORS\*/ 'DACILUZUMAB', 'BASILIXIMAB', 'ANAKINRA', 'RILONACEPT', 'USTEKINUMAB', 'TOCILIZUMAB', 'CANAKINUMAB', 'BRIAKINUMAB',

'SECUKINUMAB', 'SILTUXIMAB', 'BRODALUMAB', 'IXEKIZUMAB', 'SARILUMAB', 'SIRUKUMAB', 'GUSELKUMAB', 'TILDRAKIZUMAB', 'RISANKIZUMAB'

/\*ATC CODE L04AD - CALCINEURIN INHIBITORS\*/ 'CICLOSPORIN', 'CYCLOSPORIN', 'TACROLIMUS', 'VOCLOSPORIN',

/\*ATC CODE L04AX - OTHER IMMUNOSUPPRESSANTS\*/ 'AZATHIOPRINE', 'THALIDOMIDE', 'METHOTREXATE', 'LENALIDOMIDE', 'PIRFENIDONE', 'POMALIDOMIDE', 'DIMETHYL FUMARATE', 'DARVADSTROCEL'

/\*CORTICOSTEROIDS\*/ 'PREDNISONE', 'METHYLPREDNISOLONE'

/\*L01AA NITROGEN MUSTARD ANALOGUES\*/ 'CYCLOPHOSPHAMIDE', 'CHLORAMBUCIL', 'MELPHALAN', 'CHLORMETHINE', 'IFOSFAMIDE', 'TROFOSFAMIDE', 'PREDNIMUSTINE', 'BENDAMUSTINE',

/\*L01AB ALKYL SULFONATES\*/ 'BUSULFAN', 'TREOSULFAN', 'MANNOSULFAN',

/\*L01AC ETHYLENE IMINES\*/ 'THIOTEPA', 'TRIAZIQUONE', 'CARBOQUONE',

/\*L01AD NITROSOUREAS\*/ 'CARMUSTINE', 'LOMUSTINE', 'SEMUSTINE', 'STREPTOZOCIN', 'FOTEMUSTINE', 'NIMUSTINE', 'RANIMUSTINE', 'URAMUSTINE',

/\*L01AG EPOXIDES\*/ 'ETOGLUCID',

/\*L01AX OTHER ALKYLATING AGENTS\*/ 'MITOBRONITOL', 'PIPOBROMAN', 'TEMOZOLOMIDE', 'DACARBAZINE',

/\*L01BA FOLIC ACID ANALOGUES\*/ 'METHOTREXATE', 'RALTITREXED', 'PEMETREXED', 'PRALATREXATE',

/\*L01BB PURINE ANALOGUES\*/ 'MERCAPTOPURINE', 'TIOGUANINE', 'CLADRIBINE', 'FLUDARABINE', 'CLOFARABINE', 'NELARABINE', 'RABACFOSADINE',

/\*L01BC PYRIMIDINE ANALOGUES\*/ 'CYTARABINE', 'FLUOROURACIL', 'TEGAFUR', 'CARMOFUR', 'GEMCITABINE', 'CAPECITABINE', 'AZACITIDINE', 'DECITABINE', 'FLOXURIDINE', 'FLUOROURACIL',

'TEGAFUR', 'TRIFLURIDINE',

/\*L01CA VINCA ALKALOIDS AND ANALOGUES\*/ 'VINBLASTINE', 'VINCRISTINE', 'VINDESINE', 'VINORELBINE', 'VINFLUNINE', 'VINTAFOLIDE',

/\*L01CB PODOPHYLLOTOXIN DERIVATIVES\*/ 'ETOPOSIDE', 'TENIPOSIDE',

/\*L01CC COLCHICINE DERIVATIVES\*/ 'DEMECOLCINE',

/\*L01CD TAXANES\*/ 'PACLITAXEL', 'DOCETAXEL', 'PACLITAXEL POLIGLUMEX', 'CABAZITAXEL',

/\*L01CX OTHER PLANT ALKALOIDS AND NATURAL PRODUCTS\*/ 'TRABECTEDIN',

/\*L01DA ACTINOMYCINES\*/ 'DACTINOMYCIN',

/\*L01DB ANTHRACYCLINES AND RELATED SUBSTANCES\*/ 'DOXORUBICIN', 'DAUNORUBICIN', 'EPIRUBICIN', 'ACLARUBICIN', 'ZORUBICIN', 'IDARUBICIN', 'MITOXANTRONE', 'PIRARUBICIN',

'VALRUBICIN', 'AMRUBICIN', 'PIXANTRONE',

/\*L01DC OTHER CYTOTOXIC ANTIBIOTICS\*/ 'BLEOMYCIN', 'PLICAMYCIN', 'MITOMYCIN', 'IXABEPILONE',

/\*L01XA PLATINUM COMPOUNDS\*/ 'CISPLATIN', 'CARBOPLATIN', 'OXALIPLATIN', 'SATRAPLATIN', 'POLYPLATILLEN',

/\*L01XB METHYLHYDRAZINES\*/ 'PROCARBAZINE',

/\*L01XC MONOCLONAL ANTIBODIES\*/ 'EDRECOLOMAB', 'RITUXIMAB', 'TRASTUZUMAB', 'GEMTUZUMAB OZOGAMICIN', 'CETUXIMAB', 'BEVACIZUMAB', 'PANITUMUMAB', 'CATUMAXOMAB', 'OFATUMUMAB',

'IPILIMUMAB', 'BRENTUXIMAB VEDOTIN', 'PERTUZUMAB', 'TRASTUZUMAB EMTANSINE', 'OBINUTUZUMAB', 'DINUTUXIMAB BETA', 'NIVOLUMAB', 'PEMBROLIZUMAB', 'BLINATUMOMAB',

'RAMUCIRUMAB', 'NECITUMUMAB', 'ELOTUZUMAB', 'DARATUMUMAB', 'MOGAMULIZUMAB', 'INOTUZUMAB OZOGAMICIN', 'OLARATUMAB', 'DURVALUMAB', 'BERMEKIMAB', 'AVELUMAB',

'ATEZOLIZUMAB', 'CEMIPLIMAB',

/\*L01XD SENSITIZERS USED IN PHOTODYNAMIC/RADIATION THERAPY\*/ 'PORFIMER SODIUM', 'METHYL AMINOLEVULINATE', 'AMINOLEVULINIC ACID', 'TEMOPORFIN', 'EFAPROXIRAL', 'PADELIPORFIN',

/\*L01XE PROTEIN KINASE INHIBITORS\*/ 'IMATINIB', 'GEFITINIB', 'ERLOTINIB', 'SUNITINIB', 'SORAFENIB', 'DASATINIB', 'LAPATINIB', 'NILOTINIB', 'TEMSIROLIMUS', 'EVEROLIMUS',

'PAZOPANIB', 'VANDETANIB', 'AFATINIB', 'BOSUTINIB', 'VEMURAFENIB', 'CRIZOTINIB', 'AXITINIB', 'RUXOLITINIB', 'RIDAFOROLIMUS', 'REGORAFENIB', 'MASITINIB',

'DABRAFENIB', 'PONATINIB', 'TRAMETINIB', 'CABOZANTINIB', 'IBRUTINIB', 'CERITINIB', 'LENVATINIB', 'NINTEDANIB', 'CEDIRANIB', 'PALBOCICLIB', 'TIVOZANIB',

'OSIMERTINIB', 'ALECTINIB', 'ROCILETINIB', 'COBIMETINIB', 'MIDOSTAURIN', 'OLMUTINIB', 'BINIMETINIB', 'RIBOCICLIB', 'BRIGATINIB', 'LORLATINIB', 'NERATINIB',

'ENCORAFENIB', 'DACOMITINIB', 'ICOTINIB', 'ABEMACICLIB', 'ACALABRUTINIB', 'QUIZARTINIB', 'LAROTRECTINIB', 'GILTERITINIB', 'ENTRECTINIB', 'FEDRATINIB',

'TOCERANIB',

/\*L01XX OTHER ANTINEOPLASTIC AGENTS\*/ 'AMSACRINE', 'ASPARAGINASE', 'ALTRETAMINE', 'HYDROXYCARBAMIDE', 'LONIDAMINE', 'PENTOSTATIN', 'MASOPROCOL', 'ESTRAMUSTINE', /\*'TRETINOIN',\*/

'MITOGUAZONE', 'TOPOTECAN', 'TIAZOFURINE', 'IRINOTECAN', 'ALITRETINOIN', 'MITOTANE', 'PEGASPARGASE', 'BEXAROTENE', 'ARSENIC TRIOXIDE', 'DENILEUKIN DIFTITOX',

'BORTEZOMIB', 'ANAGRELIDE', 'OBLIMERSEN', 'SITIMAGENE CERADENOVEC', 'VORINOSTAT', 'ROMIDEPSIN', 'OMACETAXINE MEPESUCCINATE', 'ERIBULIN', 'PANOBINOSTAT',

'VISMODEGIB', 'AFLIBERCEPT', 'CARFILZOMIB', 'OLAPARIB', 'IDELALISIB', 'SONIDEGIB', 'BELINOSTAT', 'IXAZOMIB', 'TALIMOGENE LAHERPAREPVEC', 'VENETOCLAX',

'VOSAROXIN', 'NIRAPARIB', 'RUCAPARIB', 'ETIRINOTECAN PEGOL', 'PLITIDEPSIN', 'EPACADOSTAT', 'ENASIDENIB', 'TALAZOPARIB', 'COPANLISIB', 'IVOSIDENIB',

'GLASDEGIB', 'ENTINOSTAT', 'ALPELISIB', 'SELINEXOR', 'TAGRAXOFUSP', 'BELOTECAN', 'TIGILANOL TIGLATE',

/\*L01XY COMBINATIONS OF ANTINEOPLASTIC AGENTS\*/ 'CYTARABINE'

) ;

immuno\_med\_name=med\_name;

immuno\_dose=dose; /\*There's a lot of missing for the dose (aka how many pills) with pred 2.5mg or 5mg\*/

immuno\_frequency=frequency;

immuno\_meds=**1**;

if med\_name="BEVACIZUMAB 1.25 MG/0.05 ML INTRAVITREAL INJECTION" then delete;

if med\_name="CYCLOSPORINE 0.05 % EYE DROPS IN A DROPPERETTE" then delete;

if med\_name="METHYLPREDNISOLONE 4 MG TABLET" then delete;

if med\_name="METHYLPREDNISOLONE 4 MG TABLETS IN A DOSE PACK" then delete;

if med\_name="METHYLPREDNISOLONE SOD SUCC (PF) 40 MG/ML SOLUTION FOR INJECTION" then delete;

if med\_name="METHYLPREDNISOLONE SOD SUCC (PF) 125 MG/2 ML SOLUTION FOR INJECTION" then delete;

if med\_name="METHYLPREDNISOLONE IVPB (JHH, BMC)" then delete;

if med\_name="MITOMYCIN 0.2 MG/ML OPHTHALMIC SOLUTION (GLAUCOMA SURGERY)" then delete;

if med\_name="PREDNISONE 1 MG TABLET" then delete;

if med\_name="PREDNISONE 2 MG TABLET,DELAYED RELEASE" then delete;

if med\_name="PREDNISONE 2.5 MG TABLET" then delete;

if med\_name="PREDNISONE 5 MG TABLET" then delete;

if med\_name="PREDNISONE 5 MG/5 ML ORAL SOLUTION (DISP CODE)" then delete;

if med\_name="PREDNISONE 5 MG/5 ML ORAL SOLUTION" then delete;

if med\_name="RITUXIMAB 1 MG/0.1 ML INTRAVITREAL INJ" then delete;

if med\_name="TRIFLURIDINE 1 % EYE DROPS" then delete;

if med\_name="TACROLIMUS 0.1 % TOPICAL OINTMENT" then delete; /\*indication = eczema\*/

if med\_name="TOCILIZUMAB IVPB IN 100 ML NS" then delete; /\*This is experimental inpatient protocol\*/

keep osler\_id immuno\_med\_name immuno\_dose immuno\_frequency immuno\_meds ordering\_dttm discon\_time auth\_prov;

**run**;