Search criteria for highest risk patients for shielding

Version 3.0

Publication date: 28 April 2020
## Version history

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Summary of changes</th>
</tr>
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<td>V1.0</td>
<td>03/04/2020</td>
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<tr>
<td>V2.0</td>
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<td>28/04/2020</td>
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Introduction

This document sets out details of the groups considered to be at highest risk should they contract Covid-19. Patients identified are sent a detailed letter advising them of the need to take Shielding advice and for the support mechanisms available to them.

The broad categories for the Shielding population aim to be uniform across the 4 Countries of the UK. However, there are will be some variation in the finer search specifications due to the differences in methodology for identifying patients for these groups, and in the clinical guidance received. There may also be adjustments necessary as the categories are refined over time. Following the learning from England, who started this process at an earlier date, wherever possible we looked to identify this group utilising data sources held centrally at Public Health Scotland (PHS). In Scotland there is no complete central collection of GP data and it was felt complex and workload intensive to ask all practices in Scotland to individually collect data for this purpose. The following Public Health Scotland (PHS), centrally held data sources, were utilised in the searches.

- Database of dispensed GP medications. Data available up to December 2019. Some of the searches for immunosuppression prescriptions used data available up to end of January 2020.
- Database of Hospital events which includes ICD10 coded diagnoses and OPCS coded procedures.

Where information was considered to be absent or incomplete in these data sources, outside agencies were contacted to create lists of the highest risk patients. This applied in particular to Transplant patients, Cancer diagnosed patients, patients at risk of immunosuppression and Pregnant women with cardiac problems.

All patients identified by the various mechanisms were checked against Death Registers and also cross referenced against other searches so try and ensure individuals received only one letter.

Solid organ transplant recipients

NHS Blood and Transplant based in Bristol provided a list of Transplant patients and this was merged with a code search of Scottish Hospital records (for code list see Appendix 1). In addition, letters were sent to patients on the following immunosuppression medications

- Azathioprine
- Mycophenolate Mofetil
- Mycophenolic Sodium
- Ciclosporin
- Sirolimus
- Tacrolimus
People with specific cancers

- People with cancer who are undergoing active chemotherapy.
- Patients who have received radical radiotherapy for lung cancer (searched since 2006).
- People with cancers of the blood or bone marrow such as leukaemia, lymphoma or myeloma who are at any stage of treatment.
- People having immunotherapy or other continuing antibody treatments for cancer.
- People having other targeted cancer treatments which can affect the immune system, such as protein kinase inhibitors or PARP inhibitors.
- People who have had bone marrow or stem cell transplants in the last 6 months, or who are still taking immunosuppression drugs.

After consultation with Cancer care specialists in Scotland the definition for ‘active’ therapy was taken as ‘currently receiving or has had in the previous 3 months’. We have subsequently been made aware that the interpretation of ‘active’ has some variation across the UK.

Chemotherapy and Radiotherapy data is not readily available from GP or PHS held data. Patients for the above groups were identified directly from the Cancer data systems in the Regions in Scotland.

People with severe respiratory conditions

All patients with cystic fibrosis

Searches made through PHS database of hospital coded data searching on ICD10 codes for Cystic Fibrosis. (E84 Cystic Fibrosis)

Patients with severe asthma

PHS Prescription data was used as a proxy for asthma diagnosis and the severity (on Leukotriene or LABA), patients were defined as severe if they were also prescribed long term oral steroids.

See appendix 2 for list of Medications.

Oral Steroid tablets – prednisolone.

From the prescribing data there is some difficulty is determining patients on long term courses of tablets and differentiating this from repeated short courses of a high dose. Knowing that it is usual for prescriptions to be on a 56-day length in Scotland we agreed a definition of:

- 3 or more prescriptions for prednisolone in the previous 6 months
  OR
- Prescriptions for prednisolone in last 6 months where total amount supplied equated to 5mg / day or more.
We accepted that this may mean that patients receiving multiple short high doses of steroid would be included but this may also be an indicator of unstable asthma.

In addition, Respiratory Physicians were asked to identify other patients with severe asthma, particularly those on biologic therapies.

**Patients with severe COPD**

Patients were identified if they had been prescribed Roflumilast or had received prescriptions for inhaler medications that included two long acting preventers (LABA and LAMA) and a steroid inhaler. See Appendix 3 for details of medications.

**Patients on home Oxygen**

This group of patients were added in Scotland as they represent a group of people likely to suffer from significant lung disease. Patients were identified from the centrally held register for the supply of Oxygen.

**Patients with severe Bronchiectasis and Pulmonary Hypertension**

This group was added following the release of guidance by the British Thoracic Society. Specialist Physicians were approached to identify people for shielding.

**People with rare diseases**

Including inborn errors of metabolism that significantly increase the risk of infections (such as Severe Combined Immunodeficiency (SCID), homozygous sickle cell disease (not trait)). Patients with Interstitial Lung Disease (ILD) and Sarcoidosis added to this group.

Searches via ISD data utilising code lists developed in England gave a high number of people, raising concerns this would lead to many people being erroneously advised to shield. Therefore, an alternative approach was taken, and Specialist centres in Scotland were approached to directly identify patients. Central searches of hospital data over the last 10 years were utilised to identify patients with ILD or Sarcoidosis. The following ICD10 codes were used for this search: -

- J84.0 Alveolar and parieto-alveolar conditions
- J84.1 Other interstitial pulmonary diseases with fibrosis
- J84.8 Other specified interstitial pulmonary diseases
- J84.9 Interstitial pulmonary disease, unspecified
- D86.0 Sarcoidosis of lung
- D86.2 Sarcoidosis of lung with sarcoidosis of lymph nodes
- D86.8 Sarcoidosis of other and combined sites
- D86.9 Sarcoidosis, unspecified
People on immunosuppression therapies sufficient to significantly increase risk of infection

This was a complex area to find patients, particularly as Primary Care and Secondary Care take responsibility for certain types of medication. The PHS prescription data only contained primary Care derived medications. There was some uncertainly about the approach taken in England.

Patients on immunosuppression drugs as for transplants were sent letters. These drugs were:

- Azathioprine
- Mycophenolate Mofetil
- Mycophenolic Sodium
- Ciclosporin
- Sirolimus
- Tacrolimus

The professional bodies for different specialities have recently circulated more detailed guidance and it is likely therefore that some patients in this group have been erroneously sent Shielding letters.

Following the advice from the Professional bodies a schema was developed for the different possible scenarios, to indicate a high risk of immunosuppression. Data is to be collected from Hospital Specialities, and where necessary will be amalgamated with PHS prescribing data to check against GP prescriptions and proxies for co-morbidities. See Appendix 4 for Flow Chart. See Appendix 5 for medication lists.

In some cases, details of patients were sent in from specialities where an assumption had to made that the patients should be considered for Shielding.

The recently published advice from the following professional bodies were consulted in devising criteria for this population:

• Neurology: 

Patients included in Shielding population if they met one of the following criteria:

• Corticosteroid equivalent to Prednisolone 20mg per day for 4 weeks or more.

• On a single agent that has high risk of causing immunosuppression eg. Cyclophosphamide, rituximab, Infliximab, Cladribine, Alemtuzumab. These medications prescribed through secondary care. Specialist services asked to identify these patients.

• On corticosteroid equivalent of Prednisolone >=5mg/day for 4 weeks or more AND on other immunosuppressive therapy.

• On two immunosuppressant medications and with a relevant co-morbidity. Centrally held hospital data was unlikely to have good records for the co-morbidities as they are often diagnosed and managed in primary care. We used prescription data as a proxy for the diagnoses.

For list of medications and Co-Morbidities, see Appendix 5.
People who are pregnant with significant heart disease, congenital or acquired.

The Clinical Lead of the Scottish Obstetric Cardiology Network collated details from each of the boards in Scotland and provided this to PHS.
Appendices

Appendix 1 – Transplants

Codes used to identify people who have had solid organ or haematological transplants in Scotland.

Definition for inclusion; any individual who had a hospital admission in Scotland with any of the procedure codes in the following list OR any of the following diagnostic codes in the 10 years prior to March 2020. Note that this would not include patients admitted to hospital in the last 6 weeks and that delays in data submission in NHS Forth Valley mean that the data are incomplete for a much longer period for residents in that board area.

OPCS Procedure Codes

E53.1  double lung transplant
E53.2  single lung transplant
E53.3  single lobe lung transplant
E53.8  other specified transplantation of lung
E53.9  unspecified transplantation of lung
G26.1  allotransplantation of stomach
G26.8  other specified transplantation of stomach
G26.9  unspecified transplantation of stomach
J01.1  orthotopic transplantation of liver nec
J01.2  heterotopic transplantation of liver
J01.3  replacement of previous liver transplant
J01.4  transplantation of liver cells
J01.5  orthotopic transplantation of whole liver
J01.8  other specified transplantation of liver
J01.9  unspecified transplantation of liver
J54.1  transplantation of pancreas and duodenum
J54.2  transplantation of whole pancreas
J54.3  transplantation of tail of pancreas
J54.4  transplantation of islet of langerhans
J54.5  renewal of transplanted pancreatic tissue
J54.8  other specified transplantation of pancreas
J54.9  unspecified transplantation of pancreas
J72.1  transplantation of spleen
K01.1  allotransplantation of heart and lung
K01.2  revision of transplantation of heart and lung
K01.8  other specified transplantation of heart and lung
K01.9  unspecified transplantation of heart and lung
K02.1  allotransplantation of heart nec
K02.2  xenotransplantation of heart
K02.3  implantation of prosthetic heart
K02.4  piggy back transplantation of heart
K02.5  revision of implantation of prosthetic heart
K02.6  revision of transplantation of heart nec
K02.8  other specified other transplantation of heart
K02.9  unspecified other transplantation of heart
M01.1 autotransplantation of kidney
M01.2 allotransplantation of kidney from live donor
M01.3 allotransplantation of kidney from cadaver nec
M01.4 allotransplantation of kidney from cadaver heart-beating
M01.5 allotransplantation of kidney from cadaver non-heart-beating
M01.8 other specified transplantation of kidney
M01.9 unspecified transplantation of kidney
G68.1 allotransplantation of ileum
B17.1 allotransplantation of thymus gland
Y27.2 allograft to organ noc
Y27.3 xenograft to organ noc

ICD Diagnostic Codes
Z94.0 kidney transplant status
Z94.1 heart transplant status
Z94.2 lung transplant status
Z94.3 heart and lungs transplant status
Z94.8 other transplanted organ and tissue status
Z94.9 transplanted organ and tissue status, unspecified

Haematology Transplants
X33.4 autologous peripheral blood stem cell transplant
X33.5 syngeneic peripheral blood stem cell transplant
X33.6 allogeneic peripheral blood stem cell transplant
W34 graft of bone marrow
W34.1 autograft of bone marrow
W34.2 allograft of bone marrow NEC
W34.3 allograft of bone marrow from sibling donor
W34.4 allograft of bone marrow from matched unrelated donor
W34.5 allograft of bone marrow from haploidentical donor
W34.6 allograft of bone marrow from unmatched unrelated donor
W34.8 other specified
W34.9 unspecified
W99 graft of cord blood stem cells to bone marrow
W99.1 allograft of cord blood stem cells to bone marrow
W99.8 other specified
W99.9 unspecified
Bone marrow harvest (patient as the potential recipient – autologous)
W35.8 other specified therapeutic puncture of bone
with
Y66.7 harvest of bone marrow
Other Transplants (non-solid organ, non-haematological)

C43.7  transplantation of conjunctiva
C46.2  lamellar graft to cornea nec
C46.3  penetrating graft to cornea
C46.5  deep lamellar graft to cornea
C46.6  amniotic membrane graft to cornea
C43.7  transplantation of conjunctiva
C46.7  transplant of corneal limbal cells

Codes included in error
Measures are being taken to identify patients who may have been erroneously detected using the following codes.

Y99   donor status
Y99.2 live related donor nec
Y99.3 live unrelated donor
Y99.4 abo incompatible donor
Y99.5 live matched related donor
Y99.6 live unmatched related donor
Y99.8 other specified donor status
Y99.9 unspecified donor status
Appendix 2 – Asthma medications

Patients required one medication from following two groups (defined as one prescription in the previous 6 months).

1. **Montelukast (also known as Singulair)**
2. **Long Acting Beta2-agonist (LABA):** Bambeterol, Formeterol, Salmeterol

<table>
<thead>
<tr>
<th>Combination inhalers for Steroid and LABA</th>
<th>Other names include</th>
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<tbody>
<tr>
<td>Beclometasone with formeterol</td>
<td>Fostair,</td>
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<tr>
<td>Budesonide with formeterol</td>
<td>Duoresp Spiromax, Fobumix Easyhaler, Symbicort</td>
</tr>
<tr>
<td>Fluticasone with formeterol</td>
<td>Flutiform</td>
</tr>
<tr>
<td>Fluticasone with salmeterol</td>
<td>AirFluSal, Seretide, Sereflo,</td>
</tr>
<tr>
<td>Fluticasone with Vilanterol</td>
<td>Relvar Ellipta</td>
</tr>
</tbody>
</table>

**To define ‘Severe’:**

- 3 prescriptions of Prednisolone in the previous 6 months
  
  OR
  
- Prednisolone tablets at average daily dose of 5mg or more in the previous 6 months.
Appendix 3 – COPD medications

- Roflumilast oral tablets (prescribed in previous 6 months)

  OR

- One from each of the following 3 groups in the previous 6 months. Combination inhalers accounted for also.

1. **Inhaled Steroid**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Other names include</th>
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<tbody>
<tr>
<td>Beclometasone Dipropionate</td>
<td>Clenil Modulite, Kelhale, Qvar, Soprobec</td>
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<tr>
<td>Budesonide</td>
<td>Budelin, Easyhaler (Budesonide), Pulmicort</td>
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<tr>
<td>Ciclesonide</td>
<td>Alvesco</td>
</tr>
<tr>
<td>Fluticasone</td>
<td>Flixotide</td>
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<tr>
<td>Mometasone</td>
<td>Asmanex</td>
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2. **Long Acting Beta2-agonist (LABA)**

<table>
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<tr>
<td>Bambuterol</td>
<td>Bambec</td>
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<tr>
<td>Indacaterol</td>
<td>Onbrez Breezhaler</td>
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<tr>
<td>Olodaterol</td>
<td>Striverdi Respimat</td>
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<tr>
<td>Formeterol</td>
<td>Easihaler (Formeterol), Foradil, Oxis</td>
</tr>
<tr>
<td></td>
<td>Turbohaler, Atimos Modulite</td>
</tr>
<tr>
<td>Salmeterol</td>
<td>Serevent Accuhaler, Neovent, Serevent</td>
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<tr>
<td></td>
<td>Evohaler, Soltel</td>
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</table>

3. **Anti-Muscarinic**

<table>
<thead>
<tr>
<th>Medication</th>
<th>Other names include</th>
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<tbody>
<tr>
<td>Aclidinium Bromide</td>
<td>Eklira</td>
</tr>
<tr>
<td>Glycopyrronium bromide</td>
<td>Seebri Breezhaler</td>
</tr>
<tr>
<td>Ipratropium bromide</td>
<td>Atrovent</td>
</tr>
<tr>
<td>Tiotropium bromide</td>
<td>Spiriva, Braltus</td>
</tr>
<tr>
<td>Umeclidinium</td>
<td>Incruse Ellipta</td>
</tr>
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</table>
### Combinations

#### 1&2 Inhaled Steroid with LABA

<table>
<thead>
<tr>
<th>Steroid Combination</th>
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<tr>
<td>Beclometasone with Formoterol</td>
<td>Fostair</td>
</tr>
<tr>
<td>Beclometasone with Formoterol and Glycopyrronium</td>
<td>Trimbow</td>
</tr>
<tr>
<td>Budesonide with Formoterol</td>
<td>Duoresp Spiromax, Fobumix Easyhaler, Symbicort</td>
</tr>
<tr>
<td>Fluticasone with salmeterol</td>
<td>AirFluSal, Seretide, Sereflo,</td>
</tr>
<tr>
<td>Fluticasone with Vilanterol</td>
<td>Relvar Ellipta</td>
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</table>

#### 1&2&3 Inhaled Steroid with anti-Muscarinic and LABA

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</thead>
<tbody>
<tr>
<td>Fluticasone with Umeclidinium and Vilanterol</td>
<td>Trelegy Ellipta</td>
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</tbody>
</table>

#### 2&3 LABA with Antimuscarinic

<table>
<thead>
<tr>
<th>LABA Combination</th>
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</thead>
<tbody>
<tr>
<td>Aclidinium bromide with Formoterol</td>
<td>Duaklir</td>
</tr>
<tr>
<td>Glycopyrronium with Indacaterol</td>
<td>Ultibro</td>
</tr>
<tr>
<td>Tiotropium with Olodaterol</td>
<td>Spiolto</td>
</tr>
<tr>
<td>Umeclidinium with Vilanterol</td>
<td>Anoro Ellipta</td>
</tr>
</tbody>
</table>
Appendix 4 – Immunosuppressive therapy flowchart

**Process for Identification of Patients on Immunosuppression therapy, at Highest Risk if Covid-19 exposure.**

Groups amalgamated from advice published by British Society for Rheumatology, the Renal Association, British Association of Dermatologists, British Society of Gastroenterology, Association of British Neurologists.

More specific advice available from these Associations.

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**GROUPS**

- **Group 5.1**
  - Corticosteroids
  - prednisolone 20mg/day for 4 weeks or more

- **Group 5.2**
  - Identified as Requiring Shielding by Clinician
  - Single Agent risk
  - Cyclophosphamide
  - Rituximab, Infliximab
  - Chlorambucil, Atezolizumab (Neuro)
  - Others identified by specialities

- **Group 5.3**
  - Multi-factorial 1
  - Corticosteroids
  - Prednisolone for 4 weeks or more
  - One other immunosuppressive medication / DMARD / biologics

- **Group 5.4**
  - Multi-factorial 2
  - Two immunosuppressants DMARD / Biologics
  - Co-morbidity**

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**IDENTIFICATION PROCESS**

- **A.** Direct from letter
  - Centrally from PHS Database of Dispensed data (to end Dec 2019)

- **B.** Secondary Care Specialists / Pharmacists to identify secondary care supplied medications
  - Data faxed to PHS

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**NOTIFICATION**

- **A.** Data to be sent to PHS Genomic Maltese
  - phs.healthdata@nhs.net
  - Label file as Group 5.2

- **B.** Secondary Care data to be sent to PHS via Health Board Co-ordinator
  - Label file as Group 5.3 (if one agent) or 5.4 (if on two agents)

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**ACTIONS**

- **Patients meeting criteria**
  - 1. Letter to Patient (all letters to be centrally sent, avoid local letters)
  - 2. GP systems to be updated with Code and Avert into patients record
  - 3. Update to Secondary Care Specialists by Health Board of Patients notified
  - 4. Notification to Social Services for Support systems

**Medications:**

- Immunossupressants – Include: methotrexate, azathioprine, myophenolate (myophenolate mofetil or myophenolic acid), ciclosporin, tacrine acid osales (or dimethyl formamide), hydroxychloroquine, leflunomide, cyclophosphamide, tacrolimus, sirolimus. It does NOT include hydroxychloroquine, dapsone, acetaminophen, sulfasalazine or sulfasalazine alone or in combination with each other.

- Biologicals – include: all anti-TNF drugs (etanercept, adalimumab, infliximab, golimumab, certolizumab pegol and biologic variants of all of those, where applicable), IL1β/IL17A agents (secukinumab, brentuximab, brodalumab), P40P19 (ustekinumab, guselkumab, tildrakizumab, risankizumab) and B cell (rituximab in last 12 months, belimumab), IL6 agents (talakumab, tocilizumab), abatacept, IL1 (canakinumab, anakinra), dupilumab (possibly lower infection risk than other drugs), emtuzumab (possibly lower infection risk than other drugs).

- Novel Small Molecule – include: apremilast, all JAK inhibitors (e.g.) baricitinib, tofacitinib etc.

**Co-Morbidities**

- **Age**≥70, Diabetes Mellitus, Lung Disease, Renal Impairment, IHD / Hypertension

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**The process for sending CHI numbers to NSS is:**

1. Please ensure the CHI file is formatted to retain the leading CHI field (zeros). Patient details will be matched on CHI number and extracted using the national CHI database.
2. Please only send data from an **NSS email address** (not University e-mail addresses).
3. Please create an Excel file with a list of CHI numbers. It is important to label the file or Patients Individually, with the group they relate to.
4. Please add a password to the Excel file and then save this file.
5. Please e-mail a specific address at NSS National Services Scotland (phs.healthdata@nhs.net) with your password protected Excel file as an attachment.
6. Please then send a second (separate) e-mail to the same e-mail address (phs.healthdata@nhs.net) which contains only the password you chose.
Appendix 5 – Immunosuppressants

High Dose Corticosteroids

<table>
<thead>
<tr>
<th>Corticosteroids</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prednisolone</td>
<td>&gt;20mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Betamethasone</td>
<td>&gt;3mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Deflazacort</td>
<td>&gt;24mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Dexamethasone</td>
<td>&gt;3mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Hydrocortisone</td>
<td>&gt;80mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Methylprednisolone</td>
<td>&gt;16mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Prednisone</td>
<td>&gt;20mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Triamcinolone</td>
<td>&gt;16mg/day for 4+ weeks</td>
</tr>
</tbody>
</table>

Corticosteroid as Dual therapy

<table>
<thead>
<tr>
<th>Corticosteroids</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prednisolone</td>
<td>&gt;5mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Betamethasone</td>
<td>&gt;0.75mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Deflazacort</td>
<td>&gt;6mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Dexamethasone</td>
<td>&gt;0.75mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Hydrocortisone</td>
<td>&gt;20mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Methylprednisolone</td>
<td>&gt;4mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Prednisone</td>
<td>&gt;5mg/day for 4+ weeks</td>
</tr>
<tr>
<td>Triamcinolone</td>
<td>&gt;4mg/day for 4+ weeks</td>
</tr>
</tbody>
</table>

DMARDS
- Methotrexate
- Azathioprine
- Mycophenolate mofetil
- Mycophenolic acid
- Ciclosporin
- Sirolimus
- Tacrolimus (not topical)
- Dimethyl Fumarate
- Hydroxycarbamide
- 6-mercaptopurine
- Leflunomide
Biologics includes

- Rituximab
- All anti-TNF drugs (etanercept, adalimumab, infliximab, golimumab, certolizumab and biosimilar variants of all of these)
- Tociluzimab
- Abatacept
- Belimumab
- Anakinra
- Seukinumab
- Ixekizumab
- Ustekinumab
- Sarilumumab
- All JAK inhibitors – baracitinib, tofacitinib etc.
- Cladribine
- Alemtuzumab
- Others identified by Specialists

Co-morbidity

- age >70,
- Diabetes Mellitus,
- any pre-existing lung disease,
- renal impairment,
- Ischaemic Heart Disease
- Hypertension

Medication Proxies for Co-Morbidities

- Insulin or oral hypoglycaemic
- Bronchodilators or inhaled corticosteroid
- Thiazide Diuretic
- Beta-blocker (but not propranolol or sotalol)
- ACE Inhibitor
- ARB’s
- Calcium channel blockers
- Nitrates (including spray)