COVID-19

High risk shielded patient list identification methodology

Introduction

The Chief Medical Officer (CMO) for England, working with the CMOs of the devolved nations and other senior clinicians, commissioned NHS Digital to produce a list of people at "high risk" of complications from COVID-19, who should be shielded for at least 12 weeks. https://digital.nhs.uk/coronavirus/shielded-patient-list/

The CMO for Wales commissioned a collaboration of national bodies in Wales (NWIS, DU, NWSSP, PHW) to identify "high risk" people for the Welsh population, based largely on the NHS Digital methodology.

This list is referred to as the Shielded Patient List (SPL). The "high risk" list was defined as a subset of a wider group of people who may be "at risk". Specific advice applies to these groups, currently this advice is:

- "At Risk" – large group normally at risk from the flu - should practice strict social distancing
- "At high risk" – a smaller sub-group (circa 70k), defined by CMO – should practice complete social "shielding"

NHS Digital have described the methodology that has been used to identify patients who meet the high risk criteria due to their inclusion in one or more of the disease groups. As there are differences in some of the systems used across the devolved nations, nuanced differences in application and interpretation of CMO guidance, this document describes the Welsh methodology.

Clinical assurance

Where possible, the Welsh approach has been to use the NHS Digital methodology and codes to support the identification of patients but where systems and access to alternative data are different, NHS Wales has sought clinical advice in relation to the application of methods. This process included clinical input from the Wales Cancer Networks, Welsh GPs, the Welsh Analytical Prescribing Support Unit, the Congenital Anomaly Register & Information Service and from Intensive Care clinicians.

Whilst a systematic approach to generation of the list of shielded patients was undertaken in a manner consistent to that being followed across the home nations, it is recognised that this approach does have limitation. These include:

- the use of centrally held administrative data to identify patients
- the inaccuracy of the underlying data
- the incompleteness of the underlying data
- the speed at which the list was required
- evolving intelligence and understanding

It is also worth highlighting that where categories are based on the coding within APC data, NHS Wales has a 95% coding completeness within 3 months.

It was agreed that these limitations would be mitigated by enabling primary care clinicians to be able to add to the list locally.

Data used

In an attempt to reduce burden on primary and secondary care services, the identification of patients for inclusion in the SPL involved interrogation and analysis of multiple national datasets collected by NHS Wales. These include:

- Patient Episode Database for Wales (PEDW) namely Admitted Patient Care (APC)
- Prescription Pricing Service (PPS)
- Welsh Demographics Service (WDS)
- Maternity Services Dataset (MSDS)
- Cancer Network Information System Cymru (CaNISC)
- Congenital Anomaly Register & Information Service (CARIS)
- Using searches deployed via Audit+ (Audit+)
- Critical Care Dataset (CC)
- Hospital Pharmacy
- Office for National Statistics Daily Death Notifications
- Electronic Master Patient Index (eMPI)

Data were extracted from NHS Wales data repositories in 3 waves on the 23rd March, 26th March and 27th March 2020.

List of health issues, which put people at a very high risk:

1. **Solid organ transplant recipients**
   People who have had transplant of, heart, lung, stomach or other part of intestine, liver, kidney, pancreas, bone marrow, muscle, parts of the eye, thymus gland. Data taken from APC where the patient has been coded with ANY ICD-10/OPCS code (Appendix 1) in ANY coding position and where the episode ended between 01/04/2018 and 31/04/2020.

2. **People with specific cancers**
   a. **People with cancer who are undergoing active chemotherapy or radical radiotherapy for lung cancer:**
      All patients who have had drug-therapy of chemotherapy or radiotherapy for lung cancer since April 2015 and all patients who have had drug-therapy of chemotherapy or radiotherapy since April 2018. Data taken from CaNISC and lung cancer diagnosis identified by ICD10 code C34: malignant cancer of bronchus and lung.

   b. **People with cancers of the blood or bone marrow such as leukaemia, lymphoma or myeloma who are at any stage of treatment.**

All patients with haematological cancers since April 2015. Data taken from CaNISC where ICD10/OPCS codes match any of the codes in Appendix 2.

c. **People having immunotherapy or other continuing antibody treatments for cancer**
Patients identified on CaNISC as having immunotherapy since April 2015. Data taken from CaNISC.

d. **People having other targeted cancer treatments, which can affect the immune system, such as protein kinase inhibitors or PARP inhibitors.**
Supplied by regional cancer networks using local hospital systems

e. **People who have had bone marrow or stem cell transplants in the last six months, or who are still taking immunosuppression drugs.**
Data taken from APC where the patient has been coded with ANY ICD-10/OPCS code (Appendix 3) in ANY coding position and where the episode ended between 01/04/2015 and 31/03/2020.

3. **People with severe respiratory conditions including all cystic fibrosis, severe asthma and severe Chronic Obstructive Pulmonary Disease (COPD)**
All patients with cystic fibrosis. Data taken from APC where the ICD-10 code E84 is in ANY position and where the episode ended between 01/04/2015 and 31/03/2020. Data from CARIS since 2002.
Patients with severe respiratory conditions which have resulted in a stay on intensive care in the last 3 years. Data taken from APC linked to CC to identify an ITU/HDU stay, where the patient has been coded with ANY ICD-10 codes (Appendix 4) in the primary position and where the episode ended between 01/04/2017 and 31/03/2020.
Patients with severe asthma or severe COPD medications dispensed (Appendix 5) in the period July 2019 to December 2019 (See annex below).

4. **People with severe single organ disease (e.g. Liver, Cardio, Renal, Neurological)**
Patients with single organ disease which has resulted in a stay on intensive care in the last 3 years. Data taken from APC linked to CC to identify an ITU/HDU stay, where the patient has been coded with ANY ICD-10 codes (Appendix 6) in the primary position, and where the episode ended between 01/04/2017 and 31/03/2020.

5. **People with rare diseases and inborn errors of metabolism that significantly increase the risk of infections (such as Severe Combined Immunodeficiency (SCID), homozygous sickle cell)**
    - Severe Combined Immunodeficiency (SCID)
    - Homozygous sickle cell disease (not trait)
    - Agranulocytosis
    - Albinism
    - Glycogen Storage Disease
    - Huntington Disease
    - Muscular Dystrophy
    - Congenital muscle disorders

- Primary Pulmonary Hypertension (not high blood pressure acquired later in life)
- Tuberous Sclerosis
- Congenital syndromes associated with short stature

This list is not exhaustive and other rare conditions may be included in this group. Data taken from APC where the patient has been coded with ANY ICD-10/OPCS code (Appendix 7) in ANY coding position and where the episode ended between 01/04/2018 and 31/03/2020. Data also taken from CARIS since 2002 for the codes in Appendix 7.

6. **People on immunosuppression therapies sufficient to significantly increase risk of infection, including:**
    - Azathioprine
    - Mycophenolate Mofetil
    - Mycophenolic Sodium
    - Ciclosporin
    - Sirolimus
    - Tacrolimus

    Data taken from PPS for the period (November 2019 to December 2019) drug list included in Appendix 8a and from Hospital Pharmacy for the period (November 2019 to February 2020). Immunocompromised patients were also identified from the seasonal flu specification (Appendix 8b). Data for the previous 6 months from deployment of the Audit+ module on the 24th March 2020. Data also taken from APC where the patient has been coded with ANY ICD-10/OPCS code (Appendix 8c) in ANY coding position and where the episode ended between 01/04/2015 and 31/03/2020.

7. **People who are pregnant and children up to the age of 18 with significant heart disease, congenital or otherwise**
    Pregnancies with congenital heart disease which would usually mean you were being followed up by a specialist heart clinic during your pregnancy. Data taken from MSDS to identify current pregnancies were matched to APC on whether they had previously had a congenital abnormality code (Appendix 9). No time constraint applied to the APC data. Children up to the age of 18 with congenital heart disease. Date taken from CARIS since 2002 for codes included in Appendix 10.

Exclusion criteria

As this piece of work relied heavily on data linkage, the NHS Number was used as the main linkage, or index, key for the included datasets. If a patient's NHS Number was not validated, the record was excluded from extracts to avoid false matching. In addition, deceased patients were identified and removed from the final composite patient list using official registered daily death notifications from the ONS, plus death notifications received directly from NHS hospital and GP systems, via the electronic Master Patient Index service – one or both of these "informal" and "formal" notifications of death were accepted.

Assurance

All extracts were validated, back to source (raw) data to ensure that integrity had been maintained. However, given that data predominantly used in this exercise are administrative and intended for only Secondary Uses, the final patient list will be influenced by how data are recorded in supplier

systems at point of care, and also how data are processed and transformed during data collection from data providers. As a result, it is accepted that a small proportion of collected data may not be representative of the patient's actual medical record.

It is recognised that the combination of codes and linkages (i.e. this methodology) could itself add errors.

These risks however, were balanced against the need to try to protect the groups of identified patients from significant complications of the COVID-19 pandemic and were tolerated.

Further information

Further information about coronavirus, including the latest guidance is available on the Welsh Government and Public Health Wales websites:

https://gov.wales/coronavirus

https://phw.nhs.wales/topics/latest-information-on-novel-coronavirus-covid-19/

Annex A: Medicines data

Given the respiratory nature of the condition additional detail is provided below of the methodology used to identify these patients. This process uses codes available in Appendix 5 and is based on the NHS Digital methodology: https://digital.nhs.uk/coronavirus/shielded-patient-list/methodology/medicines-data

The PPS dataset includes a defined sub-set of NHS prescriptions dispensed data, with the exception of prescriptions which are dispensed in prisons, hospitals and private prescriptions. It does not include items not dispensed and disallowed. The data only included items prescribed via WP10 forms and dispensed by NHS dispensing contractors. WP10 forms are the green forms patients receive. Therefore, it did not include: Hospital prescribing or Medicines supplied over the counter. Patient NHS numbers cannot be captured from every prescription and in general are available for around 94% of prescription forms (as of December 2019). However, this proportion can differ for individual drugs and prescribing organisations. The data set provided all record level data below the British National Formulary classification (BNF code) levels requested. The data is partially limited as there is no indication data i.e. reason for prescribing. Some medicines have more than one indication for use.

This rule is to identify patients with severe asthma Patients or severe Chronic Obstructive Pulmonary Disease (COPD). Identification of patients with severe asthma was defined as taking regular or continuous courses of prednisolone, alongside ICD-10 coding. The usual medicines prescribed for patients with asthma are classified under BNF sections 3.1, 3.2 and 3.3. Many of the medicines within these BNF sections are also prescribed for patients with Chronic Obstructive Pulmonary Disease (COPD). Since PPS data does not include indication for prescribing, it is not possible to differentiate all prescribing within BNF 3.1 and 3.2 between asthma and COPD.

Patients likely to have severe asthma were identified, using medicines data, by the following methodology:

(a) Patients with asthma were identified as being prescribed Long acting beta$_2$-agonist (LABA) as either a LABA or in combination with an inhaled corticosteroid (LABA/ICS) OR prescriptions for a leukotriene receptor antagonist (e.g. monteluekast).

Sub paragraph	BNF code
Leukotriene Receptor Antagonists	030302

A list of LABA and LABA/ICS medicines (presentations) used in the analysis is detailed in Appendix 5a. Formulations indicated only for COPD were excluded (Indacterol; Olodaterol).

(b) From the above list of patients, those who had been dispensed 4 or more prescriptions for prednisolone between July 2019 and December 2019 were identified and considered to have severe asthma.

Chemical substance	BNF code
Prednisolone	0603020T0

Due to time constraints more detailed analysis of the quantities of prednisolone per prescription (such as number of tablets) was not possible.

Whilst PPS data does not include medicines prescribed and supplied by secondary care there can be a reasonable assumption that the majority of the management of asthma and COPD is undertaken in primary care via WP10 prescriptions.

In order to identify regular or continuous prescribing of prednisolone (defined as 4 or more prescriptions), analysis of the full 6 months data was necessary. Patients who commenced regular or continuous prednisolone recently (for example, October onwards) may not be included.

Because of the method of identifying patients with asthma, the data will include patients who have COPD and have also received 4 or more prescriptions for prednisolone. However, removing the patients identified in COPD analysis will have reduced the number (see below).

Patients who were likely to have severe COPD were identified, using medicines data, by

(a) Prescriptions for a Long Acting Beta Agonist (LABA) and a Long Acting Muscarinic Agonist (LAMA) and an inhaled corticosteroid (ICS) in either November and/or December 2019.

NB: prescribed as either 3 separate medicines, combinations of single and dual / combination medicines or as triple therapy.
A list of medicines used in the analysis is detailed in Appendix 5b

OR

(b) Patients who have had a prescription for Roflumilast most recently in November 2019 and/or December 2019.

Chemical substance	BNF code
Roflumilast	0303030B0

For more details on the methodology see the Gold COPD resource