# Networked Data Lab Wales
# Shielding patients during COVID-19.

## *Methodology Output 2: Health and health care use of shielded patients in Wales*

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| **Description** | Supporting methodological document for Health Foundation funded Networked Data Lab Wales centralised analysis, Output 2. Summary of methodology used to link the shielding cohort and routinely collected inpatient data to characterise their health and health care use prior to the pandemic. |
| **Authors** | Dr Alisha Davies (Head of Research and Development, Public Health Wales), Dr Jiao Song (Principle Statistician, Public Health Wales), Tomos Smith (Senior Research Officer, Public Health Wales), Laura Bentley (Research Officer, Public Health Wales) on behalf of NDL Wales. |
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### 1. Overview

Shielding was introduced in Wales on 23rd March 2020, to protect a section of the population deemed to be clinically vulnerable to the effects of COVID-19.

Those at "high risk"/extremely vulnerable to serious illness if exposed to coronavirus were identified on the Shielded Patient List (SPL) held by NWIS (NHS Wales Informatics Service). Details on how shielded patients were identified are available here: https://nwis.nhs.wales/coronavirus/coronavirus-content/coronavirus-documents/covid-19-high-risk-shielded-patient-list-identification-methodology. The anonymised list of shielded patients was made accessible within the Secure Anonymised Information Linkage (SAIL) Databank to support this analysis. All research conducted has been completed under the permission and approval of the SAIL Independent Information Governance Review Panel (Project ID 1224).

This document provides the methods for Output 2 of the Health Foundation funded Networked Data Lab Wales centralised analysis to determine the history of long term conditions and hospital admission rates of the shielding patients in Wales. This should be referred to alongside the Health Foundation *The Networked Data Lab: Statistical analysis plan for a descriptive analysis of the*

*shielding patients during COVID-19 (October 2020)* and the "*Networked Data Lab Wales Shielding patients during COVID-19. Output 1: Demographics of the shielded patients"* (version 1.1).

## 2. Methods - Output 2: Health and health care use amongst the shielded population

This analysis links the anonymised shielded patient cohort with anonymised patient records within the Patient Episode Database for Wales (PEDW) to identify hospital recorded morbidity and hospital admissions for this cohort.

Admissions

All inpatient activity for the shielded patient cohort (identified as described in Output 1) for the period 01/03/2018 and 29/02/2020 (inclusive) was identified by linking on anonymised personal ID with the PEDW dataset. All activity for patients admitted before the 01/03/2018 but discharged after this date, and all activity for patients who were admitted before the 29/02/2020 but discharged after this date were included. Any admissions with no information regarding the reason or duration of stay were excluded.

Discrete admissions were identified by the first available diagnosis for the last episode of each spell (as the primary diagnosis) which did include multiple spells per patient.

Long term conditions

Long term conditions of interest were defined using the ICD-10 code list for the Elixhauser Comorbidity Index[1] (Appendix 1).

Age, deprivation, reason for shielding

These explanatory variables were assigned following the methods already described in "*Networked Data Lab Wales Shielding patients during COVID-19. Output 1: Demographics of the shielded patients"* (version 1.1).

## 3. Overview

Of the 128,690 shielded individuals in Wales, 80,221 patients had activity between the study dates above. Of these, 1,096 patients were excluded as their hospital admissions had no information regarding the reason or duration of stay.

Of the 79,125 patients with eligible inpatient admissions, 67,520 had a record of one or more of the long term conditions of interest. The remaining patients (11,605) did not have a record of any of the long term conditions of interest.

**Acknowledgments**

All data were anonymised and linked within the privacy protecting SAIL Databank. We used anonymised data and therefore we are exempt from National Research Ethics Committee (NREC). An Information Governance Review Panel (IGRP) application (Project ID: 1224) to link these data has been approved. This study makes use of anonymised data held in the Secure Anonymised Information Linkage (SAIL) Databank. We would like to acknowledge all the data providers who make anonymised data available for research.

**Contact**

Email: alisha.davies@wales.nhs.uk ; phw.reseach@wales.nhs.uk

**References**

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2. Welsh Government. *WIMD 2014* [Internet]. 2014. Available from: https://statswales.gov.wales/Catalogue/Community-Safety-and-Social-Inclusion/Welsh-Index-of-Multiple-Deprivation/Archive/WIMD-2014 [Accessed 10th December 2020].

**Appendix 1 – List of conditions of interest with ICD10 codes**

| variable level | condition | ICD10_3digit | ICD10_4digit |
|---|---|---|---|
| chf | congestive heart failure | I43, I50 | I099, I110, I130, I132, I255, I420, I425, I426, I427, I428, I429, P290 |
| carit | cardiac arrhythmias | I47, I48, I49 | I441, I442, I443, I456, I459, R000, R001, R008, T821, Z450, Z950 |
| valv | valvular disease | I05, I06, I07, I08, I34, I35, I36, I37, I38, I39 | A520, I091, I098, Q230, Q231, Q232, Q233, Z952, Z953, Z954 |
| pcd | pulmonary circulation disorders | I26, I27 | I280, I288, I289 |
| pvd | peripheral vascular disorders | I70, I71 | I731, I738, I739, I771, I7.0, I792, K551, K558, K559, Z958, Z959 |
| hypunc | hypertension, uncomplicated | I10 | |
| hypc | hypertension, complicated | I11, I12, I13, I15 | |
| para | paralysis | G81, G82 | G041, G114, G801, G802, G830, G831, G832, G833, G834, G839 |
| ond | other neurological disorders | G10, G11, G12, G13, G20, G21, G22, G32, G35, G36, G37, G40, G41, R56 | G254, G255, G312, G318, G319, G931, G934, R470 |
| cpd | chronic pulmonary disease | J40, J41, J42, J43, J44, J45, J46, J47, J60, J61, J62, J63, J64, J65, J66, J67 | I278, I279, J684, J701, J703 |
| diabunc | diabetes, uncomplicated | | E100, E101, E109, E110, E111, E119, E120, E121, E129, E130, E131, E139, E140, E141, E149 |
| diabc | diabetes, complicated | | E102, E103, E104, E105, E106, E107, E108, E112, E113, E114, E115, E116, E117, E118, E122, E123, E124, E125, E126, E127, E128, E132, E133, E134, E135, E136, E137, E138, E14.2, E143, E144, E145, E146, E147, E148 |
| hypothy | hypothyroidism | E00, E01, E02, E03 | E890 |
| rf | renal failure | N18, N19 | I120, I131, N250, Z490, Z491, Z492, Z940, Z992 |

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|---|---|---|---|
| ld | liver disease | B18, I85, K70, K72, K73, K74 | I864, I982, K711, K713, K714, K715, K717, K760, K762, K763, K764, K765, K766, K767, K768, K769, Z944 |
| pud | peptic ulcer disease excluding bleeding | | K257, K259, K267, K269, K277, K279, K287, K289 |
| lymph | lymphoma | C81, C82, C83, C84, C85, C88, C96 | C900, C902 |
| metacanc | metastatic cancer | C77, C78, C79, C80 | |
| solidtum | solid tumour without metastasis | C00, C01, C02, C03, C04, C05, C06, C07, C08, C09, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C30, C31, C32, C33, C34, C37, C38, C39, C40, C41, C43, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C97 | |
| rheumd | rheumatoid arthritis / collagen vascular disease | M05, M06, M08, M30, M32, M33, M34, M35, M45 | L94.0, L941, L943, M120, M123, M310, M311, M312, M313, M461, M468, M469 |
| coag | coagulopathy | D65, D66, D67, D68 | D691, D693, D694, D695, D696 |
| obes | obesity | E66 | |
| wloss | weight loss | E40, E41, E42, E43, E44, E45, E46, R64 | R634 |
| fed | fluid and electrolyte disorders | E86, E87 | E222 |
| blane | blood loss anaemia | | D500 |
| dane | deficiency anaemia | D51, D52, D53 | D508, D509 |
| alcohol | alcohol abuse | F10, T51, E52 | G621, I426, K292, K700, K703, K709, Z502, Z714, Z721 |
| drug | drug abuse | F11, F12, F13, F14, F15, F16, F48, F19 | Z715, Z722 |
| psycho | psychoses | F20, F22, F23, F24, F25, F28, F29 | F302, F312, F315 |
| depre | depression | F32, F33 | F204, F313, F314, F315, F341, F412, F432 |