The Networked Data Lab Wales: Insights into individuals accessing reablement care at a local authority level in Wales - methodology

1 Initial engagement

In June 2023, all LAs (n=22) in Wales were invited to take part in this project. Initial engagement involved establishing the feasibility of newly linking LA reablement care data with primary and secondary healthcare and administrative datasets held within the SAIL Databank to better understand the population in receipt of reablement care at a local level. Following the expression of interest from LAs for research in this area and the strategic alignment in Wales, aims and objectives were developed through discussions with Networked Data Lab (NDL) partners, RLIN (Reablement Learning and Improvement Network), local authority reablement care and data leads, and PPIE groups (SAIL Consumer Panel, DSPP PAPAG).

2 Data specification

To examine reablement care packages provided to adults aged 18 years and above in Wales, we developed a core data specification and shared with all interested LAs in Wales. There is no single standardised dataset for reablement care in Wales, so as a result the data received from each LA is slightly different (see appendix A).

3 Secure data transfer

Data acquisition is a highly demanding process, involving the LA completing and signing a tripartite agreement, extracting the data from local systems, and then splitting and uploading identifiable data to DHCW for anonymisation and non-identifiable information to the SAIL Databank. Anonymised data is sent to SAIL and recombined with the non-identifiable data, making the data source ready for linkage. Individual identities are always protected in SAIL Databank. Approved researchers can only access anonymised data (9). Timelines for this process vary dramatically based on experience within the teams involved. Initial engagement began in June 2023, with the first LA reablement care dataset becoming available within the SAIL Databank in May 2024.

4 Linkage to health data

A cohort of individuals in receipt of reablement care from participating LAs was created using the cleaning criteria outlined in Section 5 (below). These reablement care records were then linked to anonymised individual-level, routinely-collected, population-scale electronic health record (EHR) and administrative health care data sources available within the SAIL Databank (1–3) using an anonymised linkage field (ALF) to determine demographic and health characteristics. The list of all SAIL data sources used in this study is provided in Appendix B.

5 Defining reablement care

The services provided under the definition of reablement care vary by LA. For the purposes of this research, reablement care is defined as any kind of reablement care package that the LA would report in Welsh Government returns. Table 1 outlines the different types of service provided under the umbrella term of reablement care in all LAs.

Table 1: Reablement service types by LA

LA name	Service Type	Definition
Bridgend	Reablement	A Therapy led service which has a clear criterion for access, people will work with the service and focus on functional goals that will maximise independence (e.g. progressing from a zimmer frame to a walking stick, improving ranges of movements in limbs) and there is a requirement for multi disciplinary input
	Bridgestart	Intake service which is non-selective with the goal of maximising independence and rightsizing ongoing care needs.
Rhondda Cynon Taf	Intermediate Care	A time-limited (1-6 weeks) service provision. The service can operate independently or work effectively with others to ensure individuals receive appropriate support following a period of ill health or during recuperation following a stay in hospital.
	Reablement	A time-limited (1-6 weeks) service provision, delivering an outcome focused service that is developed by Occupational Therapists / Physiotherapists, assistant therapy practitioners and front-line staff to support individuals to achieve their goals and aspirations. Some reablement programmes are delivered by "Therapy only" to individuals when their cases is too complex for front line staff delivery.
	Intake – ceased operating	Taking people (usually with long term care needs) from hospital and rightsizing the package of care before commissioning ongoing care from the private sector.
	Hybrid – ceased operating	Joint venture, pilot project with trained health and social care front line staff, providing social care and health tasks to individuals in their own home e.g. personal care, medication, health monitoring, and other health and social care tasks combined.

6 Study period

Defined on a per LA basis, reflecting the period of data availability.

Table 2: Study period per LA

LA name	**Start Date**	**End Date**
Bridgend	01/04/2021	31/03/2024
Rhondda Cynon Taf	01/04/2022	31/03/2023

NOTE: the completion status of packages varied, with Bridgend providing data on all packages completed within the study period, whilst RCT provided data on any packages delivered (i.e. started, ongoing or completed) during the study period. To maintain a consistent approach across LAs, reablement package start date was used to determine demographics and health. Due to the coverage of data from Bridgend, this likely results in an artificially low number of packages towards the end of the study period (i.e. they were completed after the study period, and thus not included in the data provisioned).

7 Inclusion criteria

- Reablement care package start date within study period (as determined by the LA).
- Linkage match of 90% or above (i.e. match on NHS number, exact match on key identifiable variables, probabilistic match on identifiable variables at 90% and above) (3).
- Have a valid sex code.
- Have a valid week of birth.
- Residing in the LA of interest.
- Death date does not precede reablement care package start date.
- Registered with a SAIL GP for a full year prior to reablement start date.

A flowchart detailing the numbers excluded at each stage can be found in Appendix C.

8 Demographics

The following demographic were explored in the analysis:

- Sex: male, female.
- Age group: under 65, 65-69, 70-74, 75-79, 80-84, 85-89, 90+.
- Deprivation: 1 (most deprived), 2, 3, 4, 5 (least deprived). Uses WIMD (Welsh Index of Multiple Deprivation) 2019 quintiles (4).
- Rurality: rural, urban. Uses Rural Urban Classification 2011.

9 Long term conditions

Long-term conditions (LTCs) were identified using primary care WLGP data. Conditions of interest were based on those used in version 1.1 of the Cambridge Multimorbidity Score, as used by the University of Cambridge Primary Care Unit (5,6). As only Read codes are available in Wales, we used Read code alternatives to Medcodes, provided by Cambridge Primary Care Unit, and Read code alternatives for product codes, developed by Hanlon et al., to identify LTCs (7,8). The look-back period for each condition was as defined by Cassell (6). The full list of LTCs used in the analysis can be found in Appendix D. Chronic painful conditions were included in this analysis as they are included within the morbidities covered by the Cambridge Multimorbidity method, but should, as noted by the original authors, be interpreted with caution as pain medications can be used for other purposes (5). Multimorbidity was defined as the presence of two or more LTCs.

To place prevalence of multimorbidity in the context of the wider population, an age-sex-deprivation-location matched cohort was created using the following steps:

- A matching pool (controls) was created of individuals who were resident in the LAs of interest but were not identified in the reablement care cohort (cases).
- Using Exact match from the R Library 'Matchit', the matching pool was matched to the Reablement cohort individuals on sex producing two groups (male and female), each containing multiple unique cases and controls.
- Cycling through the cases in each group one at a time, controls were filtered to those with the same WIMD and age-group as the case, and the index date of the selected case was imputed to all remaining controls as a pseudo-index date.
- The inclusion criteria were then re-applied to the remaining controls based on the pseudo-index date, and a single match was selected at random. This resulted in a 1:1 exact match for each case. After a control had been matched, it was removed from the list of controls in the group i.e. controls are only matched once.
- We verified that the age group, sex and WIMD distribution of the reablement care cohort and matched cohort were similar using cross-tabulation functions in R.

10 Referral type

Referral type was divided into two categories: hospital discharge versus community referral. Where available within the local authority data, this was taken from the "location of patient at the time of referral" variable. Where data was missing, or the variable was unavailable, this was determined by the presence/absence of a hospital discharge within the week prior to reablement start date. The use of one week prior was determined by first testing the sensitivity and specificity of one week versus two weeks (as proposed by LA reablement leads) using records for which "location of patient at the time of referral" was available, and then further testing 6 days and 8 days to confirm one week provided the best fit (Table 2).

Table 3: Sensitivity tests to determine the number of days prior to reablement care package start date to determine a hospital discharge referral

Days prior	Hospital discharge referral (N)	Variation from recorded count (%)	Community referral	Variation from recorded count (%)
NA (as recorded in data)	577	NA	561	NA
14	49	-91.51	1089	94.12
8	25	-95.67	1113	98.40
7	543	-5.89	595	6.06
6	527	-8.67	611	8.91

11 Step change in support

Local authorities are required to report step change in support post completion of a reablement care pack to Welsh Government. There are four categories of step change in support:

- reduced the need for support.
- maintained the need for the same level of support.
- mitigated the need for support.
- neither reduced, maintained nor mitigated the need for support.

Within each local authority's data, this was recorded under the column "relative_level_of_support_needs_post_reablement". Additional steps of cleaning were applied to Bridgend to align with Welsh government categories. "Mitigated the need for support (independent)" was relabeled as "Mitigated the need for support" and "Decrease the need for support" as "reduced the need for support".

Finally, counts and proportions of completed packages with each category of step change in support were calculated within each local authority's data.

12 References

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13 Appendices

13.1 Appendix A: LA data variables

	Data item	Bridgend	RCT
Section 1	NHS number	Y	Y
	Person ID (from source system)	Y	Y
	First name(s)	Y	Y
	Surname	Y	Y
	Address	Y	Y
	Postcode	Y	Y
	Date of Birth	Y	Y
Section 2	Referral date	N	N
	Reablement start date	Y	Y
	Reablement end date	Y	Y
	Type(s) of service delivered	Y	Y
	Service provider(s)	Y	Y
	Reason for referral	N	N
	Referral source	N	N
	Location of patient at time of referral (e.g. home, hospital)	Y	Y
	Reason for case closure if not progressed to reablement	N	N
	Reason for non-completion of reablement package	Y	Y
	Relative level of support needs post-reablement (Welsh Gov reporting requirement)	Y	Y
	Hours or visits per week for reablement care	Y	N
	Referred to falls prevention service*	N	N

13.2 Appendix B: SAIL data sources

Dataset	Description	Dated version
Annual District Death Extract (ADDE)	From Office for National Statistics (ONS) mortality register, containing data on all deaths in Wales within the study period	01/04/2024
Welsh Demographic Service Dataset (WDSD)	Contains linkable data on demographics of the Welsh population from the Census	08/04/2024
Wales Longitudinal General Practice (WLGP)	Patients' GP events in Wales	01/01/2024
Emergency Department Data Set (EDDS)	All emergency department attendances in Wales	01/04/2024
Patient Episode Database Wales (PEDW)	All inpatient admissions in Wales	08/04/2024

13.3 Appendix C: Exclusion flowchart

Data	Bridgend	RCT
Raw data	1228	1364
Total excluded	57	32
Remaining records	1171	1332

13.4 Appendix D: List of Long-Term Conditions

Obtained from source: Table A3.2 in https://www.cmaj.ca/content/cmaj/suppl/2020/01/28/192.5.E107.DC1/190757-res-3-at.pdf. Original study(15).

ID	Morbidity
Morbidities based on Read code ever recorded	
1	Alcohol Problems
2	Anorexia or bulimia
3	Atrial fibrillation
4	Blindness and low vision
5	Bronchiectasis
6	Chronic liver disease and viral hepatitis
7	Chronic sinusitis
8	COPD
9	Coronary heart disease

10	Dementia
11	Diabetes
12	Diverticular disease of intestine
13	Hearing loss
14	Heart failure
15	Hypertension
16	Inflammatory bowel disease
17	Learning disability
18	multiple sclerosis
19	Parkinson's disease
20	Peptic ulcer disease
21	Peripheral vascular disease
22	Prostate disorders
23	Psychoactive substance misuse (not alcohol)
24	Rheumatoid arthritis, other inflammatory polyarthropathies & systematic connective tissue disorders
25	Stroke & transient ischaemic attack
26	Thyroid disorders
Morbidities based on prescription in last 12 months	
27	Constipation (treated)
28	Migraine
Morbidities based on combination of Read code ever recorded and/or prescription in last 12 months	
29	Epilepsy (currently treated)
30	Asthma (currently treated)
31	Irritable bowel syndrome
32	Psoriasis or eczema
Morbidities otherwise defined	
33	Anxiety & other neurotic, stress related & somatoform disorders OR depression
34	Cancer - [New] Diagnosis in last 5 years (excluding non-melanoma skin cancer)

35	Chronic kidney disease
36	Painful condition
37	Schizophrenia (and other non-organic psychosis) or bipolar disorder