CDM
Patient
Outcomes

Audit Report

Chronic Disease Management (CDM) programme and attendance outcomes:

A National Audit of General Practice Electronic Medical Records pre- (2019) and post- (2022/2023) introduction of CDM

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Contents

1. Background

Healthcare systems that manage health issues at the earliest opportunity in primary care are more efficient and economical[1]. As life expectancy in the Republic of Ireland (ROI) continues to increase[2], numbers of older patients looked after in general practice also increases[3]. Patients aged over 70 years in ROI are entitled to free public healthcare via a General Medical Services (GMS) or Doctor-Visit Card (DVC) card. These patients attend their GP more than any other group, and understandably have the highest rates of comorbidities[4].

In 2020, the Health Service Executive (HSE) launched a suite of Enhanced Community Care (ECC) measures, which includes the structured Chronic Disease Management (CDM) programme and more recently, the national rollout of ECC hubs, which provide heretofore hospital-based services via Community Specialist Teams (CSTs)[5]. Both of these initiatives are welcome developments for Irish patients attending general practice and are in line with Sláintecare healthcare reform objectives[6].

General practice has responded enthusiastically to the CDM programme, performing 140k CDM reviews in 2020, 225k reviews in 2021, 400k reviews in 2022 and 570k reviews in 2023[7]. Over two and a half thousand GPs[8] have opted in to provide the CDM programme[9], the 570k reviews performed in 2023 translates to each of our GPs performing 4 comprehensive CDM reviews per week for their patients with highest healthcare needs. The ECC rollout also continues apace, with plans to deliver over 140k patient contacts

[1] Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. Milbank Q. 2005;83(3):457-502.

[2] Department of Health. Key trends Report 2023.

[3] Department of Health. Healthy Ireland survey 2023.

[4] Primary Care Reimbursement Service (PCRS) Open Data analyses on patient numbers by card type (Mar 2023).

[5] HSE website- Enhanced Community Care. Available at: https://www.hse.ie/eng/services/list/2/primarycare/enhanced-community-care/ (accessed 1st August 2024).

[6] Department of Healthcare. Sláintecare. Available at: https://www.gov.ie/en/campaigns/slaintecare-implementation-strategy/ (accessed 1st August 2024).

[7] Primary Care Reimbursement Service (PCRS) Open Data analyses on treatment claims (STCs) (March 2024).

[8] Irish College of GPs – Annual statistics update 2023. Published April 2024.

[9] HSE- First report of the Structured Chronic Disease Management Programme in General Practice (Mar 2022).

through 28 Integrated Care Programme for older persons CSTs and over 228k patient contacts through 28 Integrated Care Programme for chronic disease CSTs in 2024[10].

General Practice in Ireland is almost fully computerised, and Electronic Medical Records (EMRs) bring efficiencies for care provision, practice administration and research. The CDM programme has seen significant additional investment by the health service, and ongoing investment by GPs, to modify GP EMRs so that all elements of the CDM programme can be seamlessly conducted within the EMR.

This study aims to leverage data stored within GP EMR patient charts, to perform an in-depth examination of patient records to investigate how CDM reviews being carried out in general practice may be impacting on the need for hospital-based services, particularly for unscheduled care.

2. Methods

This retrospective cohort study examines patient records, comparing pre-implementation and post-implementation data, to assess the impact of the HSE CDM programme on healthcare utilization patterns. Inclusion criteria were as follows:

- Patients, greater than 18 years of age
- Who have received at least one CDM review in 2023
- With at least one visit to a public outpatient department (OPD), acute medical unit (AMU) or emergency department (ED) in 2019

In addition to capturing patient age, comorbid CDM-conditions and number of medications, data collection focuses on examining attendance before (2019) and after the introduction of the CDM programme (2022/2023) for the following settings:

- GP out-of-hours (OOH) visits (2019 versus 2022 or 2023)

[10] HSE- National Service Plan 2024. Available at: https://www.hse.ie/eng/services/publications/serviceplans/hse-national-service-plan-2024.pdf (accessed 1st August 2024)

- AMU/ED visits (2019 versus 2022 or 2023)
- Inpatient Admissions (2019 versus 2022 or 2023)

Finally, GPs were also asked to record whether or not each individual patient being reviewed was engaged with Extended Community Care (ECC) Hub services as part of the expanded community care model.

While GPs identified CDM patients using standard EMR reporting tools, a custom-built visual basic program embedded in the data collection Excel file ensured CDM patients being reviewed by the practice were first randomised to reduce risk of bias prior to data collection. GPs were asked to work through their randomised list of patients to identify maximum of 20 patient files meeting the above inclusion criteria. The structured, anonymized data return form was then returned to the Irish College of GPs (the 'College') research department for analysis. Half of the participating GPs returned data on 2019 versus 2022, with the other half returning data for 2019 versus 2023. Of note, Chi-squared testing reveals no significant difference (see Appendix 1 for calculations) between the primary endpoint of interest (ED attendance) between 2022 and 2023, and thus both are combined in the Results section as the "post-" period of interest to this study.

Practices were recruited via the College webinar, the College eZine, the clinical leads group and other College channels, prioritizing geographical distribution to ensure national representation in data returned. The study adheres to strict privacy and ethical standards, including a full Data Privacy Impact Assessment, Research Ethics Committee approval, and secure data handling procedures. Data analysis focuses on descriptive statistics, providing an initial overview of patient characteristics and healthcare utilization trends. This includes calculating counts, proportions, and summary statistics of attendance rates at different healthcare settings, with comparisons between pre- and post-implementation data points.

3. Results

Data returns from 15 general practice clinics distributed nationally describe the healthcare setting visitation for 303 individual patients in 2019 and 2022/2023. Figure 1 shows a detailed geographic breakdown of returns.

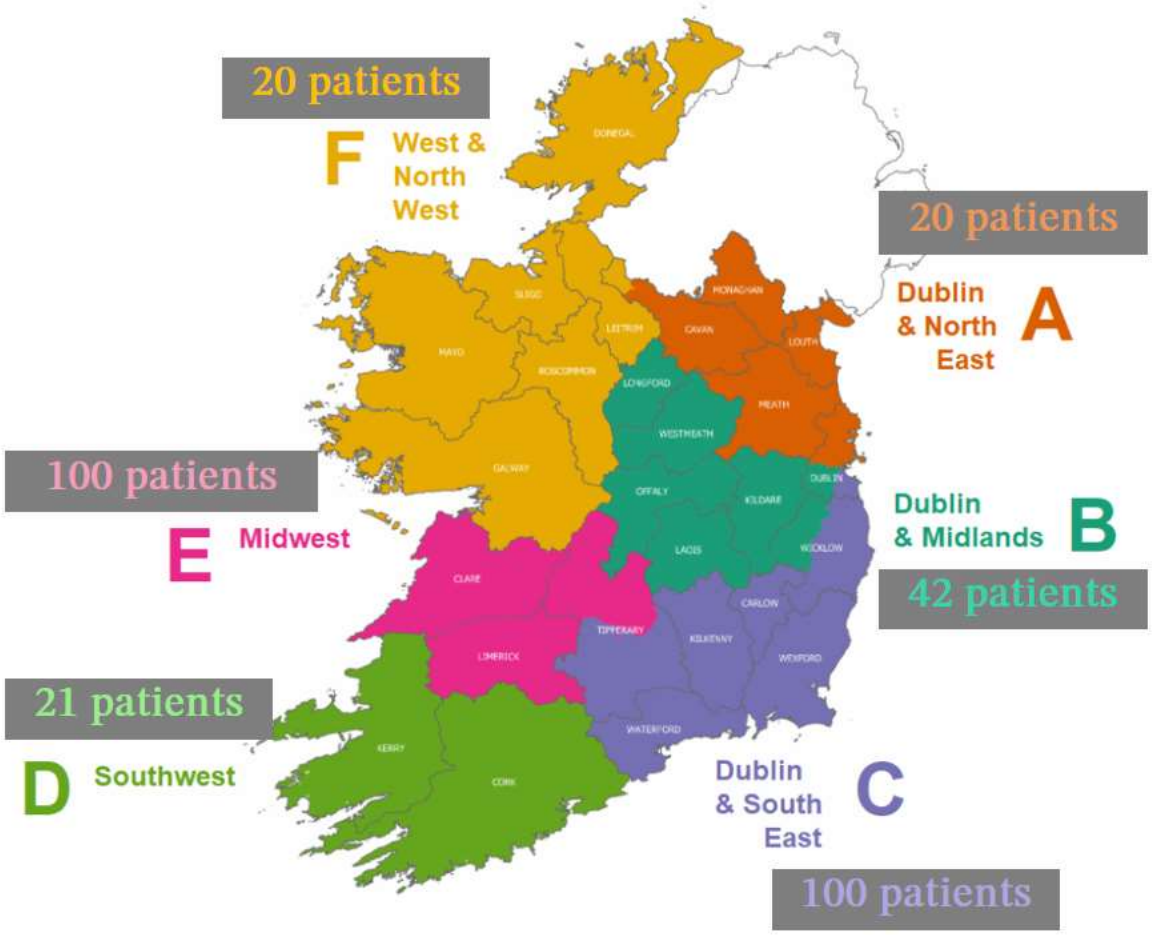

Figure 1- Returns from GPs by HSE Health Region

3.1 Patient characteristics

Figure 2 demonstrates the age distribution of the patients meeting the inclusion criteria, with a median age of 76yrs. While initially CDM was specifically targeted at the older patient groups with highest healthcare need [9], our inclusion criteria are targeting those with a pre-existing public healthcare system requirement in 2019, and thus our cohort are likely to be slightly older than the current "average" CDM patient.

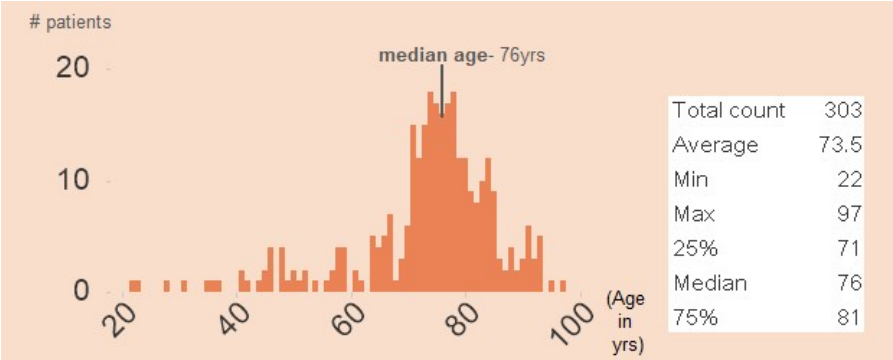

Figure 2- Patient Age Distribution

3.2 Comorbid conditions and Medications

Figure 3 shows the distribution of CDM-related conditions recorded for our patient cohort, in addition to their number of current medications. A majority of patients meet the criteria for "multi-morbidity" (two or more chronic conditions[11]), and it should be noted that these data returns only relate to chronic conditions currently covered by the CDM programme. The right-hand panel of Figure 3 shows that over half of patients were prescribed 10 or more medications, which speaks to the complexity of care involved in the CDM programme.

[11] Skou ST, Mair FS, Fortin M, Guthrie B, Nunes BP, Miranda JJ, Boyd CM, Pati S, Mtenga S, Smith SM. Multimorbidity. Nat Rev Dis Primers. 2022 Jul 14;8(1):48.

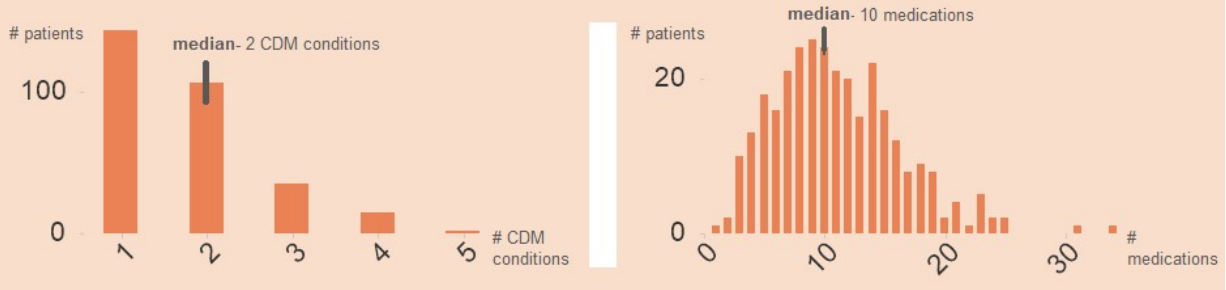

Figure 3 – Distribution of CDM-related conditions and Current medications

3.3 Attendance data

Data were collected from all 303 patients. Regarding main outcomes of interest:

Emergency Department/Acute Medical Unit Visits-

- In 2019, there were 186 visits to the emergency department or acute medical units for the cohort being studied (n=303), which equates to just over 6 ED visits per 10 patients in that year. This reduced to 130 visits for the cohort in the post-period, an absolute reduction of 56 visits, or a relative reduction of 30%.

Inpatient Admissions -

- In 2019, there were 133 inpatient admissions for the cohort being studied (n=303), which equates to just over 4 admissions per 10 patients in that year. This reduced to 98 admissions for the cohort in the post-period, an absolute reduction of 35, or a relative reduction of 26%.

GP out-of-hours (OOH) Visits –

- In 2019, the cohort visited a GP OOH service 86 times, which equates to just under 3 OOH GP visits per 10 patients in that year. This reduced to 58 visits for the cohort in the post-period, an absolute reduction of 28, or a relative reduction of 33%.

Thus, large reductions in visits were seen across all treatment settings in our CDM patient cohort, as shown in Figure 4.

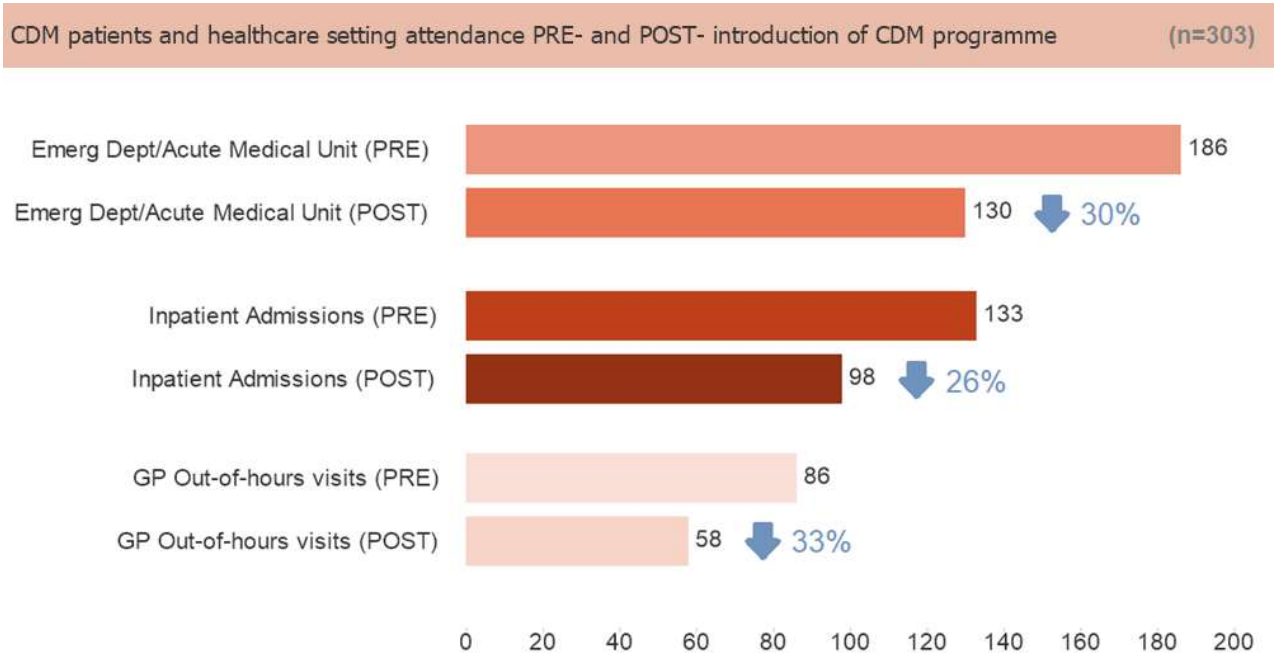

Figure 4 – Large reductions in Unscheduled Healthcare for CDM cohort

3.4 Extended Community Care (ECC) Referrals data

GPs were also asked to record whether or not each individual patient being reviewed were engaged with Extended Community Care (ECC) Hub services. Just 11 (3.6%) patients were referred to ECC services in 2022 or 2023.

4. Discussion

This study demonstrates large reductions in use of unscheduled care in Public Hospitals and OOH GP services for the CDM cohort under study. It is noteworthy that this patient cohort were 3-4 years older in the post-period, and yet continued to see reduced use of all unscheduled care settings, as follows:

- Firstly, a reduction in ED attendance of 30% was observed in the cohort studied. This is particularly striking given a national rise in ED attendance of 24% from 2019 to 2023 [12,13].
- Secondly, the cohort had a 26% decrease in inpatient admissions. This is also at odds with national data regarding hospital admissions, which are largely stable in number between 2019 and 2023 (though length of stay is increasing). Given that average length of stay in Irish public hospitals is currently 6.1 days and increases to more than 8 days for those aged 65 years plus, an absolute reduction of 35 admissions in our cohort of 303 patients translates to a saving of 280 bed days [12]. Indeed, we know that those aged 65 years and over accounted for 40% of inpatient discharges and 58% of inpatient bed days in 2022 [13]. The fact that CDM is targeting these older patients and reducing their need for unscheduled hospital care provides evidence that CDM is successfully delivering a significant "shift-left" for the wider health service.
- Thirdly, the CDM cohort's use of GP OOH services also fell by a third in our study. Given these are complex patients, most often with multi-morbidity and polypharmacy, it is positive to see their requirement to obtain necessary urgent care in GP OOH services reduce, as these services may not have a full set of records for these patients.

[12] HSE website- Acute Hospitals Division- Hospital activity update - April 2024. Available at: https://www.hse.ie/eng/about/who/acute-hospitals-division/hospital-activity/hospital-activity-update-april-2024.html (accessed 10th August 2024)

[13] Healthcare Pricing Office. Activity in Public Hospitals 2022. Available at: http://www.hpo.ie/latest_hipe_nprs_reports/HIPE_2022/Activity%20in%20Acute%20Public%20Hospitals%20in%20Ireland%202022%20Annual%20Report%20(September%202023).pdf (accessed 10th August 2024)

Finally, our data suggests that for the CDM review patients, relatively few (< 5%) of our patients were referred to ECC hubs in 2022 and 2023. The patients referred to ECC CSTs require specialist team input to enable the GP to continue to manage them in the community. GP referrals to ECC CSTs are likely to increase as these teams become more embedded and integrated into our communities.

5. Conclusion

The ECC and CDM programmes continue to deliver for public patient in Ireland. Considerable reductions in attendance at unscheduled or urgent care settings, and in inpatient admissions, are seen pre- and post – introductions of the CDM programme. This is very encouraging for general practice, the programme at large and the patients that choose to be involved.

Trends seen are all the more encouraging given that the patients were 3-4years older during the post-period of this study and the fact that trends observed herein are at odds with national data around use of unscheduled hospital care by the population. These observations suggest that a well-managed chronic disease programme in the community is effective at reducing the requirement for unscheduled public hospital care.

Appendix 1

Chi-squared calculations for 2022 vs 2023 data – No significant difference observed.

	2022	2023	*Marginal Row Totals*
exposed (ED visit)	42 (43.74) [0.07]	52 (50.26) [0.06]	94
not exposed (no ED visit)	99 (97.26) [0.03]	110 (111.74) [0.03]	209
Marginal Column Totals	141	162	303 (Grand Total)

The chi-square statistic is 0.1882. The *p*-value is .664389. *Not* significant at $p < .05$.