Understanding Heart Failure and Chronic Obstructive Pulmonary Disease Representation Risk in the South West Region

Paul Wembridge, Meredith Glennen, Georgia Pendlebury, Katherine Stewart

South West Healthcare, Ryot Street, Warrnambool, Victoria, 3280

Background

Australians who are admitted to hospital for management of Heart Failure (HF) or Chronic Obstructive Pulmonary Disease (COPD) are at high risk of readmission.[1,2] Despite this, approximately one in three readmissions may be avoidable.[3]

Although HF and COPD disproportionately affect rural communities, research into representation risk reduction has focused largely on metropolitan or other high-density population groups.[1,2,4,5]

The Hospital Admission Risk Program (HARP) is a service that aims to decrease hospital demand through the provision of specialist care in the ambulatory/community setting for people with complex needs who present frequently or are at imminent risk of presenting to hospital.[6]

There is a need for current, up-to-date, local research describing the characteristics of South West Healthcare (SWH) HARP clients who are at risk of representation to hospital. This research can then be used to guide future improvement strategies aimed at reducing representation rate for this cohort.

Aims

To determine representation rates for SWH HARP clients with a recent inpatient admission for the management of HF or COPD.

To describe the characteristics of HARP clients with HF or COPD who represent to SWH.

Method

This retrospective medical record audit utilised pre-existing reports to obtain:

- A list of all HARP clients (commenced between 01/01/2021 and 31/12/2023)
- Demographic details of all HARP clients
- A list of all inpatient discharges with corresponding International Classification of Diseases 10th Edition (ICD-10) coding (01/01/2021-30/06/2024)[7]
- A list of all emergency department presentations (01/01/2021-30/06/2024)

Data matching between reports was undertaken using a Visual Basic® / Microsoft Excel® script. The script utilised the medical record number and admission/discharge dates to match data between reports, applied the inclusion criteria (**Table 1**) and then determined the earliest emergency department presentation and/or inpatient admission post-HARP commencement.

Representation to hospital was defined as an inpatient admission or presentation to the emergency department. Statistical significance was determined using chi-square test or t-test. Clients with both COPD **and** HF were excluded from subgroup analysis by disease state.

Ethical approval to undertake this research was granted by the South West Healthcare Human Research Ethics Committee (Review Reference: LRVIC/108947/SWH-2024-430104(v1), Local Reference: 2024 09)

Results

A total of 104 HARP clients met inclusion criteria of which 30 (29%) represented within 28 days of commencing HARP (**Figure 1**). In the subgroup of clients who commenced HARP between 01/01/2021 and 30/06/2023 (n=80), the 1-year representation rate was 78%.

There was a trend towards higher **28-day** representation rates in clients with COPD (36% vs 25% P=0.26) and higher **1-year** representation rates in clients with HF (80% vs 71% P=0.43) although neither reached statistical significance. In clients who represented within 1 year, the mean time to first representation was 90 days (COPD: 78 days, HF: 93 days).

The majority of clients were discharged from their index admission on weekdays (95%). There was a trend towards higher 28-day representation rates in males although this did not reach statistical significance (33% vs 24% P=0.29).

There was no statistically significant difference in index admission length of stay, client age or number of ICD-10 coded comorbidities when comparing clients readmitted within 28 days to those who were not readmitted **(Figure 2**).[7]

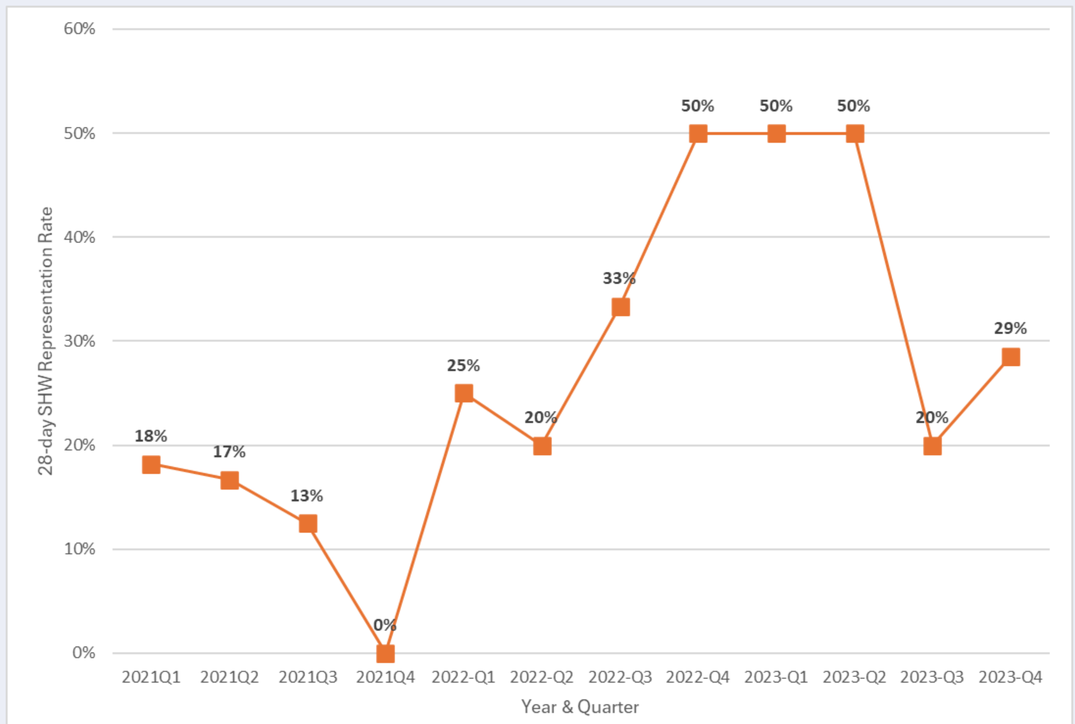

Figure 1: Hospital Admission Risk Program 28-day (from inpatient discharge of the index admission, see Table 1) SWH representation rates by quarter.

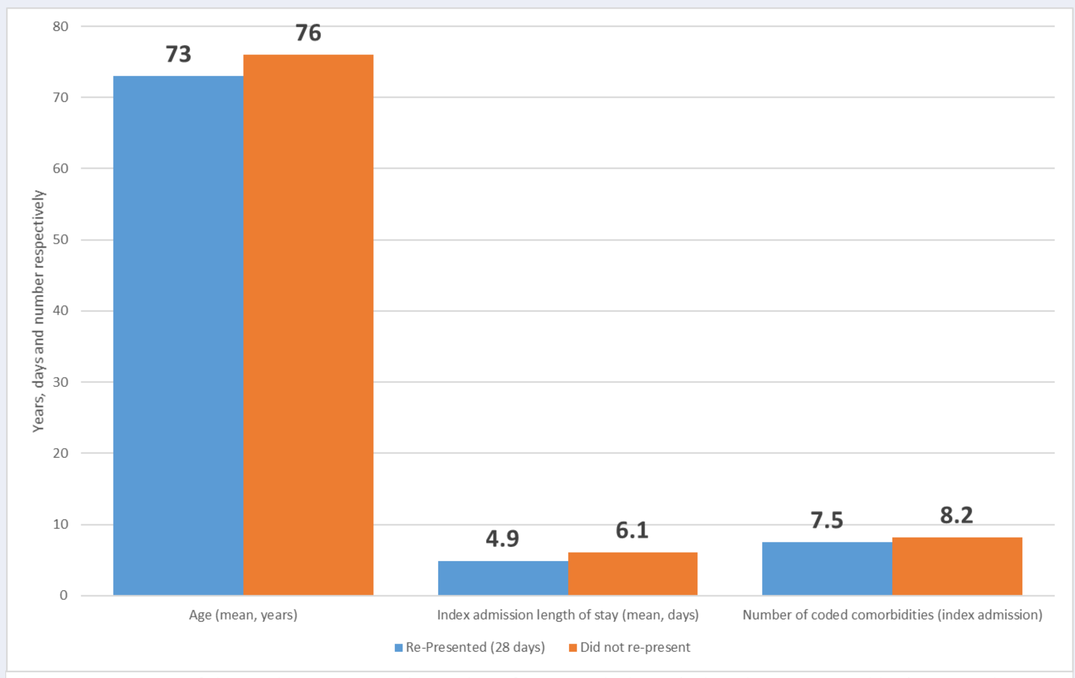

Figure 2: Comparison of clients who represent within 28 days of inpatient discharge (index admission, see Table 1) compared to those who do not. All comparisons: P>0.05

Table 1: Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
Inpatient discharge within seven days of HARP commencement (index admission)	Missing HARP commencement date
ICD-10 coded HF (I50) and/or COPD (J44) on the index admission[7]	

Discussion

This study has confirmed that clients who are referred to HARP with HF/COPD are at high-risk of representation to hospital.

The representation rates identified in this study are higher than studies undertaken in metropolitan cohorts.[1] Although these differences may be partially explained by methodological differences between studies, additional factors in a rural context could include limited access to general practitioners, differing levels of health literacy & self-management skills and barriers created by geographical isolation. These factors could be explored further as targets of future quality improvement activities aimed at reducing representation rates.

Conclusion

Clients with COPD/HF referred to the SWH HARP are at high risk of hospital representation. This patient cohort may benefit from further quality improvement activities aimed at reducing representation rates.

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