

Readmission of patients with congestive heart failure: the need for focused care

HM Ma¹ MB, ChB, CM Lum² FHKAM (Medicine), FRCP (Edin),
J Woo³ FHKAM (Medicine), FRCP

¹ House Officer, Department of Medicine and Therapeutics, Prince of Wales Hospital, Hong Kong

² Consultant, Medical and Geriatrics Unit, Shatin Hospital, Hong Kong

³ Chief-of-Services, Medical and Geriatrics Unit, Shatin Hospital, Hong Kong

Correspondence to: Dr CM Lum, Consultant, Medical and Geriatrics Unit, Shatin Hospital, Hong Kong. E-mail: lumcm@ha.org.hk

To the Editor—Congestive heart failure (CHF) is an incurable chronic disease. Aims of medical treatment include improvement in cardiac function, reduction of symptoms, and improved quality of life. From the health care administration point of view, patients with CHF rank second after those with chronic obstructive pulmonary disease in terms of readmission rate. In Hospital Authority institutions in 2002, the unplanned readmission rate within 4 weeks was around 25% (personal communication). In 1990, Vinson et al¹ proposed that 53% of early readmissions for heart failure were preventable. Attempts were made by means other than pharmacotherapy to reduce this unplanned readmission rate. Measures included a multidisciplinary team approach, fast-track out-patient clinic follow-up, a case management approach, and disease management programmes. Meta-analysis and systematic reviews of the benefits have shown conflicting results, possibly due to differences in target population, quality of care, and programme design.²⁻⁵ Ultimately, it was not possible to focus interventions to reduce readmission rates on a specific group of patients or reverse specific underlying cause(s). In addition, an approach that non-differentially involves all team members will utilise maximum resources and may not be effective because it lacks specificity. Targeted intervention to reduce readmission rates depends on identification of precipitating factors. We performed a survey of patients readmitted to hospital with known CHF to ascertain the precipitating factors that led to the indexed admission.

The survey was conducted between June and July 2005. It involved a convenient sample of patients with

a past diagnosis of heart failure, who were transferred from the Prince of Wales Hospital (PWH) to Shatin Hospital with a principal diagnosis of CHF. Patients were excluded if they lived in a residential care home, if they had no previous diagnosis of CHF before the indexed admission, or if they were unable to communicate. The absence of a previous CHF diagnosis was confirmed with the patient and crosschecked with hospital notes and the Hospital Authority Clinical Management System. A single researcher reviewed all subjects' PWH notes and histories for the following:

- (1) evidence to support a diagnosis of CHF on admission (at least one of the following: elevated jugular venous pressure, chest X-ray showing pulmonary congestion/pleural effusion, presence of S₃/S₄/gallop rhythm);
- (2) any change in medication (cardiac or non-cardiac medications) in the previous month and whether an appointment was given within 1 month of change in regimen;
- (3) evidence of infection (classified as presence of at least one of the following: elevated temperature, white blood cell count of $\geq 14 \times 10^9$ /L, positive microbiological culture; if none of these were present, yet the patient had subjective symptoms of upper respiratory tract infection [URTI], they were classified as URTI);
- (4) evidence of acute coronary syndrome (two of three criteria met: angina, electrocardiogram changes, troponin T > 0.03);
- (5) evidence on emergency department electrocardiogram of new-onset atrial fibrillation/supraventricular tachycardia/ventricular arrhythmia;

TABLE
Assessed causes leading to re-admission*

Causes	Percentage
Unavoidable/unexpected causes	
Change in medication with follow-up appointment of ≤4 weeks	12%
Acute coronary syndrome	24%
Infection (solid evidence or clinical upper respiratory tract infection)	40%
New-onset arrhythmia	4%
Potentially avoidable causes	
Change in medication with follow-up appointment of >4 weeks later	32%
Poor drug compliance	12%
Poor diet/fluid compliance	24%

* Patients could have more than one precipitating factor

- (6) evidence of possible non-compliance with medication (either self-admitted or unable to recall the correct regimen);
- (7) evidence of possible non-compliance with diet/fluid advice (either self-admitted or unawareness of the need for fluid/diet restriction).

A total of 25 patients fulfilled the recruitment criteria and were included in the survey. Their mean age was 81.6 (standard deviation, 8.57) years with a male-to-female ratio of 2:3. All had confirmed evidence of CHF. The probable contributing factors to their flare up of CHF are shown in the TABLE.

The precipitating factors for readmission were, in descending order: infection, recent change in medication, poor diet or drug compliance, acute coronary syndrome, and new onset of arrhythmia. A total of 36% (drug and diet compliance) of these factors are potentially avoidable if patients/caregivers are better educated about the control of CHF. Another 32% of readmissions with CHF might have been prevented if closer follow-up had been initiated following a change in medication. Erhardt and Cline⁶ identified similar reasons for readmission, in order of descending frequency: inadequate discharge planning and follow-up (35%), failed social support (21%), angina/poor compliance (each in a range of 14-33%). In our survey, infection leading to hospitalisation accounted for 40% of readmissions, much higher than the reported 16 to 23%. Our survey used loose criteria for bacterial infection (ie presence of any of the named criteria) and it is debatable whether a simple URTI will precipitate CHF. This 'benefit of the doubt' approach may have led to overestimation of its importance. As our survey was based on a hospital cohort, the level of patient independence and carer stress on read-

mission would differ from the pre-morbid level. We were unable to estimate the proportion of patients whose readmissions were due to these factors.⁷

Although our survey was based on selected patients transferred from PWH only, it provided important preliminary information that may help focus care to prevent future readmissions. It also demonstrated the importance of obtaining an accurate history (instead of relying on laboratory results) to identify the precipitating causes and initiate appropriate intervention instead of presuming and repeating a diagnosis of CHF. A large-scale study is required to identify the precipitating causes of unplanned readmissions among CHF patients to guide further targeted intervention. The results of such a study may lead to more focused and more cost-effective care.

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