



## Care of Patients With Cardiovascular Disorders

## Prevalence and characteristics of urinary incontinence in a cohort of patients with chronic heart failure



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## ABSTRACT

**Background:** Evidence describing the characteristics of urinary incontinence (UI) in patients with chronic heart failure (CHF), and the impact of this combination of conditions on functional status and quality of life, is limited.

**Objective:** The primary aim of this study was to determine the prevalence and characteristics of UI in a cohort of CHF patients.

**Methods:** A prospective survey of 100 outpatients with CHF was undertaken.

**Results:** There were 43 (65.1%) patients with UI secondary to mixed incontinence ( $n = 16$ , 37.2%), urge incontinence ( $n = 19$ , 44.2%), stress incontinence (3, 6.9%) or post micturition dribble ( $n = 5$ , 1.6%) and 23 (34.9%) cited urgency with the potential for urge incontinence as their primary continence problem.

**Conclusion:** UI was bothersome and managed by patients to minimize interference in daily living. Strategies for the measurement and management of UI in disease specific cohorts such as CHF requires further exploration.

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## Introduction

Evidence describing the interplay between urinary incontinence (UI) and chronic heart failure (CHF) is limited despite a robust understanding of the burden of these conditions in the context of an aging society. CHF and UI are increasingly prevalent as a consequence of comorbid conditions such as obesity, diabetes and chronic medical conditions, in addition to aging.<sup>1,2</sup> Both conditions are associated with reduced functional capacity and increased mortality.<sup>3,4</sup> The hypothesis that there is an association between heart failure physiology and UI is yet to be tested. Factors influencing the interaction between these conditions are underexplored. Emerging evidence implies diuretic use in CHF incites UI and may provoke or exacerbate pre-existing UI.<sup>5,6</sup> The notion of therapeutic competition underpinning drug–disease interaction,

where treatment for CHF precipitates UI, has been proposed.<sup>7</sup> Removing medications to relieve UI however, can and does worsen CHF. Hospital readmissions for CHF are commonly the result of non-adherence to diuretic therapy or because of dietary indiscretions that increase sodium intake<sup>8</sup> and lack of adherence to medications in the context of CHF have been problematic for optimal heart failure management.<sup>9,10</sup> Medication non-adherence has been shown to increase all-cause mortality and when specific types of medication are reviewed diuretics are the medication most likely to elicit non-adherence.<sup>9,11–13</sup> Evidence describing the characteristics of UI in patients with CHF is at best scant. Further, it is not known whether CHF patients with UI are less likely to adhere to diuretic medication. The purpose of this study was to establish baseline descriptive evidence of the characteristics of UI in a cohort of patients with CHF, to determine whether UI was associated with health related quality of life and to determine if UI was associated with reduced medication adherence in these patients.

The prevalence of incontinence, in Australians aged 15 years and over is 26% and increases with age; when aged 50–59 years 20% of men and 44% of women are affected, when 70 years or older 30% of men and 57% of woman are affected.<sup>14</sup> The monetary value of the disease burden from incontinence in Australia is estimated to be \$16.7 billion in 2010 for community dwelling individuals and \$7.1 billion for aged care residents.<sup>14</sup> Studies of prevalence and cost

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associated with UI in the United States claim it affects 11–34% of men and 43–50% of women over 60 years, and 43–80% of nursing home residents at an estimated minimum cost of \$14 billion annually.<sup>4</sup> Similar findings have been reported from France<sup>15</sup> and the Netherlands.<sup>16</sup>

CHF affects approximately 1–2% of Australian adults and up to 10% of people aged over 65 years.<sup>17</sup> The trajectory of this illness involves cyclical and progressive instability. In 2012–2013 there were 50,983 hospital admissions for CHF, an increase of 24% from 2002 to 2003, and the estimated financial burden associated with this disease was more than \$2.7 billion dollars per year. Five-year survival ranges from 50% to 75% and approximately 4000 deaths in Australia are attributable to CHF annually.<sup>17,18</sup> The prevalence of CHF dramatically increases with age with 1% of people aged 50–59 years, 10% of people aged 65 years and older, and over 50% of people aged 85 years and older affected.<sup>17</sup> In the United States CHF affects up to 2% of the population and while 30-day mortality rates associated with CHF have decreased the economic burden associated with readmission rates, primary and end-of-life care for patients with CHF is estimated to be in excess of \$US33 billion annually.<sup>1</sup>

Despite the promotion of continence worldwide and the development of continence management strategies, UI remains under-diagnosed and under-reported.<sup>19–21</sup> Particularly common among multiparous women, UI is a problem with multiple causes. Stress, urge, neurogenic, overflow and functional incontinence are the result of pathophysiological derangement of structural, cognitive and or neurological function. Treatment modalities include lifestyle modification, pelvic floor physiotherapy, medications, surgery and other forms of non-surgical intervention.<sup>21,22</sup> By far the greatest burden imposed by incontinence is however the consequences it has for quality of life.<sup>23</sup> Patients frequently report feelings of shame and embarrassment, low self-esteem and a reluctance to engage in social or physical activities. Other problems linked to UI include carer strain, depression, containment cost burden, disruption of sleep and an increased risk of falls.<sup>24,25</sup>

An Australian study by Hwang and colleagues<sup>26</sup> found 49% of patients attending a heart failure service at major metropolitan hospital in Brisbane experienced UI. Beta-blocker dose explained 23% of the variance in incontinence in this group that was also associated with diuretic dose, being female and having birthed children. Lindeman et al<sup>27</sup> undertook secondary analyses on a data set of patients with CHF, 45% of who reported UI. In this cohort UI was also associated with female sex, being an outpatient and self-reported poor health. In a study exploring the co-occurrence of chronic diseases and geriatric syndromes (UI, falls), 11,113 adults representing 37.1 million Americans over the age of 65 were interviewed. CHF was prevalent in 4.8% of the population and had the largest burden of co-occurring conditions. In respondents with CHF, 57.6% also had coronary artery disease, 43% had experienced falls, 36.5% were diabetic and 36.7% had UI.<sup>28</sup> When patients with CHF have NYHA Class III or IV, urinary urgency with or without incontinence is almost 3 times more prevalent than in those with NYHA Class I or II.<sup>5</sup>

The interplay between CHF symptom management and UI is complex and our understanding of associations between these conditions is limited. The primary aim of this study was to determine the prevalence and characteristics of UI in a cohort of CHF patients. UI characteristics included the type of incontinence; stress, urge, mixed or functional, the frequency of incontinence and patient perceived cause of incontinence. Secondary aims of the study were to determine the severity of UI in terms of how bothersome incontinence was for patients, to determine how UI impacts on quality of life, to determine whether CHF related quality of life differed between continent and incontinent patients, whether beliefs or barriers to taking medications for CHF differed between

continent and incontinent patients taking diuretics, and whether there was a correlation between beliefs about medication compliance and quality of life associated with CHF.

## Methods

### *Design and setting*

We undertook a prospective descriptive survey of patients with a diagnosis of CHF who attended the outpatient Heart Failure Disease Management Program (HFDMP) at our hospital. The study conformed with the principles outlined in *Declaration of Helsinki* (Br Med J 1964; ii:177) and was approved by the institutional Human research and Ethics Committee (#2012.123). The setting for this study was the Royal Melbourne Hospital; a University affiliated, major metropolitan hospital in Melbourne, Victoria, Australia. The Cardiology Department is the major Victorian provider for Adult Congenital Cardiac disease, Cardiac genetics, complex arrhythmia management and laser lead extractions. The Department has a 24-h acute coronary intervention service and a surgical division that performs congenital structural intervention, percutaneous valve insertion and approximately 1000 cardiothoracic procedures each year.

The HFDMP delivered at the center is based on care models developed in the United States.<sup>29</sup> The program is managed by Cardiologists, coordinated by a dedicated Clinical Nurse Consultant (CNC) and supported by allied health staff including a Physiotherapist, Dietician, Social Worker and Occupational Therapist. Patients with the following criteria are referred to the service following an indexed inpatient admission leading to a diagnosis of heart failure or because of an exacerbation of known CHF; NYHA III–IV, LVEF < 35% as measured by echocardiography or nuclear gated blood pool scan, greater than 18 years of age and suitable for outpatient care post discharge. Telephone advice commences within three days of discharge and includes information on daily weight, fluid and sodium management, patient initiated diuretic management and seeking GP review if weight gain is greater than 1 kg per day for two consecutive days, with worsening dyspnea or peripheral edema in the context of increasing diuretic dosage. When stable patients attend a 10-week multidisciplinary exercise and education program with an emphasis on self-management, education and exercise.

### *Sample*

We recruited 100 consecutive patients from the HFDMP via the Outpatient Clinic or Cardiology Department inpatient service following stabilization after readmission for an exacerbation of CHF. To be eligible for inclusion patients had to meet HFDMP entry criteria (NYHA III–IV, LVEF < 35% at the time of HF diagnosis), be fluent in English, capable of providing written informed consent, greater than 18 years of age and receiving outpatient care. Patients were excluded if they were non-English speaking, were having their first HFDMP visit or were being seen in the clinic for screening for trans-arterial valve replacement (TAVI). We excluded patients having their first HFDMP visit as patients in this program attend the clinical regularly and we knew there would be opportunity for recruitment at a later date when the patient had established participation in the program. We excluded patients from the HFDMP who were having TAVI as the nature of this procedure and the requirement for hospitalization associated with it had the potential to impact on heart failure medication management and continence status. At any given time there are approximately 180 patients enrolled in the HFDMP.

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