Temporal Trends in Hospitalisations for Heart Failure

Abstract

Heart failure (HF) is the most common cause for admission in patients over 65 and hospitalisations account for almost 2% of all hospital bed days in Ireland. A need to understand the epidemiological data in relation to hospitalisations for HF was an important part in the planning and distribution of heart care services. The aim of this study was to analyse the temporal trends in hospitalisations for HF and look at potential areas for improvement. Cross sectional data was obtained from the Eurostat database. Data was extracted with the ICD 10 code for heart failure (J-50). The years 2002-2010 were analysed between the ages of 0-105. Between 2002 and 2010 there were 51369 admissions for HF in Ireland, of which 87% were older than 65 years old. The age standardised hospitalisation rates decreased from 157.5 per 100,000 to 127.2 per 100,000, a relative decrease of 19.2% (p=0.02). There was an increase in HF hospitalisations for those aged >85 from 17.9% to 26.7% (p=0.001). There was no significant change in length of stay (12.6 days in 2002 and 12.4 days in 2010). This study of epidemiological surveillance data on Irish HF hospitalisations has shown a 19% reduction in hospitalisations between 2002 and 2010. Although this study shows an overall successful reduction in HF admission rates, the challenges remain in ensuring we manage the burden of those >65 years, in particular those >85 years.

Introduction

Heart failure (HF) is a major public health problem in Ireland with an estimated prevalence of 2% in Irish adults increasing to 10% in those over 75; it is a leading cause of admission to hospitals and accounts for almost 1% of the health care budget in Ireland. In the early 2000s it was felt that HF hospitalisations could reach endemic proportions in Ireland and in 2002 the Irish Heart Foundation produced a positional document which called for a cohesive strategy in an attempt to provide a framework for combating the rising HF hospitalisation rate. There is a need to understand epidemiological data in relation to hospitalisations for HF as it can play an important part in the planning and distribution of heart care services. The ability to observe temporal trends has the potential of indicating particular groups of the population that are vulnerable and could potentially benefit from targeted preventative efforts. It can also help determine the impact of health care programs and policy implemented. Analysis of HF hospitalisations has been published in the US, Canada, UK however currently there is no published Irish data examining trends in hospitalisations. The aim of this study was to analyse the temporal trends in hospitalisations for HF and look at potential areas for improvement in HF hospitalisations.

Methods

Cross sectional data was obtained from the Eurostat database. Eurostat is a Directorate-General of the European Commission located in Luxembourg. It has responsibilities to provide statistical information to the institutions of the European Union (EU). Data can be freely accessed on the website, in which the data is hierarchically ordered in a navigation tree. Statistics can be extracted using an interactive tool. Data was extracted in Microsoft Excel and then subsequently to Statistical Package for the Social Sciences (SPSS) for analysis. Data was extracted with the ICD 10 code for heart failure (J-50). The code covers left ventricular failure, systolic congestive heart failure, systolic (congestive) heart failure, diastolic (congestive) heart failure, combined systolic (congestive) and diastolic (congestive) heart failure and heart failure unspecified. The years 2002-2010 were analysed with an age range of 0-105. Data was extracted on number of hospitalisations (male and female) and length of stay. Age standardisations rates were standardised to the European population and were calculated using the direct method. The annual Irish population was obtained via the Eurostat database. Since data is anonymised and freely available on the Internet, ethical approval was not required.

Results

Between 2002 and 2010 there were 51369 hospitalisations for HF in Irish hospitals for patients between 0-105 years. Of these 51369 hospitalisations 28116 (54.7%) were males and 23253 (45.3%) were females.

Hospitalisations Temporal Trend

The national HF hospitalisation rate declined significantly from 2002 to 2010 (Figure 1). In 2002, there were 6173 hospitalisations for HF (54.7% males, 54.3% females) equating to 127.10 hospitalisations per 100,000. In 2010, there were 5679 hospitalisations for HF (55.6% males, 44.4% females) equating to 121.97 hospitalisations per 100,000. This was a relative decrease of 19% (p=0.02).

Gender

Sub-analysis of hospitalisations by gender showed there was a statistically significant decrease in number of hospitalisations for females and males over the 8 year period (Figure 2). A similar decline was observed in both genders. For males in 2002 there were 174.26 per 100000 hospitalisations, which decreased to 142.48 per 100000 in 2010, a relative decrease of 23% (p=0.002). For females there were 142.52 per 100000 hospitalisations, which decreased to 111.97 per 100000 in 2010, a relative decrease of 21% (p < 0.0001).

Burden of the those >65 years

Of the total 51,369 hospitalisations during the 8-year period, 87% of the hospitalisations were aged 65 years and older, with the 75-84 year old age group accounting for the largest share of this (42%). The percentage change in hospitalisation rate from 2002 compared to 2010 showed that those under the age of 65 decreased by 15%. There was also a decrease in those aged 65-74, 75-84 (34.7%, 17.9% respectively). However the rate of hospitalisations increased in those aged 85 and over by 27%. Analysis by gender (Figure 3), highlights that the hospitalisation rate in males declined by 22.29% for those <65 years old, 30.44% for 65-74, 10.03% for 75-84 and increased 36.23% in those >85. A similar pattern was observed in females, a decline of 2.17% for those <65 years old, 42.43% for 65-74, 25.84% for 75-84 and an increase of 19.84% in those >85.

Hospital Length of Stay (LOS)

The total observed mean length of stay slightly increased from 12.0 days to 12.4 days, a relative increase of 3.2% over the 8-year period (p=0.08). There were no significant differences according to gender. When analysed per age group, there was no discernable trend, with all age groups trending similar length of stays with limited change over the 8-year period.

Discussion

Temporal Trends in Hospitalisations for Heart Failure
This study is the first reported epidemiological analysis of temporal trends in hospitalisations for HF in Ireland from 2002–2010. The main results of this study show a 19% decrease in age-standardised rates of hospitalisation for HF over the 8-year period. This is remarkable when you consider the trend for improved survival with HF, which could potentially enable more hospitalisations. This overall reduction in hospitalisation rates is largely due to a decrease in the incidence of ischaemic heart disease, with the leading cause of heart failure--heart failure--as experienced by other programs through the introduction of heart failure units. The overall reduction in number of admission is largely due to a decrease in the incidence of heart failure. This reduction includes a shift towards greater outpatient care, focused GP education and community campaigns helped by improved access to cardiac imaging. Although this study demonstrates a significant reduction in HF hospitalisation rates, challenges remain in ensuring we manage to reduce the burden of those >65 years, in particular those >85 years. With the introduction of the National Heart Failure Programme there should be a further reduction in hospitalisations for HF in Ireland.

The observed mean length of stay did not decrease over the 8 year period but slightly increased from 12.0 days to 12.4 days, a relative increase of 3.2% over the 8-year period. Although not statically significant it did show a general trend towards longer stays (p = 0.08). Interestingly, our study also showed that the LOS had minimal change over the 8 year period when analysed by age group. However trying to account for the lack of decline will likely focus on the hospitalisation of more complex patients in the community, as well as social reasons (nursing home, social supports). There still needs to be significant inroads made into those aged >65, who account for a large majority of the hospitalisations with particular attention focused on those aged >95 as there was a significant percentage increase in the number of hospitalisations for this age group, 36% increase for males and 19% increase for females. There are a few considerations and limitations to this study. We point out that the reduction in HF hospitalisations using ICD 10 diagnosis codes compared to ICD 9 may have some impact upon the coding of the patients and subsequently on our calculations of hospitalisation rates. This study of epidemiological surveillance data on Irish HF hospitalisations has shown a reduction in hospitalisations between 2002 and 2010. The overall reduction in number of admission includes a shift towards greater outpatient care, focused GP education and community campaigns helped by improved access to cardiac imaging. Although this study demonstrates a significant reduction in HF hospitalisation rates, challenges remain in ensuring we manage to reduce the burden of those >65 years, in particular those >85 years. With the introduction of the National Heart Failure Programme there should be a further reduction in hospitalisations for HF in Ireland.

References


9. Schafelberger M, Swedberg K, K*ster M, Ros’n M, Rosengren A. Decreasing one-year mortality and hospitalisation rates for heart failure in Sweden and 30 day readmission rates. With a lack of patient identifier we lacked the ability to gather further demographic data such as race and region specific data within Ireland, as well as clinical data which would enable us to determine the severity of the HF and type of HF (systolic, diastolic or preserved EF). This should however improve in the near future with the introduction of the health identifiers bill 2013, which will provide patients with a unique identifier number across the country. Lastly the change in ICD coding in Ireland from 2007 on 10 to ICD 11 may have some impact upon the coding of the patients and subsequently on our calculations of hospitalisation rates.


