Introduction

Hyponatremia (HN) is an electrolyte abnormality that occurs either in isolation or as a complication of many other medical illnesses (example: heart failure, liver failure, renal failure, pneumonia, etc.). HN is characterized by low sodium levels and is categorized as:

- Mild (serum sodium 130 to <135 mmol/L)
- Moderate (serum sodium 125 to 130 mmol/L)
- Severe (serum sodium <125 mmol/L)

HN is prevalent in 20-25% of patients hospitalized with heart failure (HF).

Evidence exists on the association of HN with increased morbidity and mortality in patients hospitalized for HF; however clinical trial data are lacking on the independent association between sodium correction and improved patient outcomes.

In terms of real-world data on resource utilization, Hernandez et al. demonstrated an association between low sodium and readmissions. Donalz et al. established an association between persistent HN (sodium level <135 at both admission and discharge) correction and reduced risk of all cause-30 day readmissions.

Since readmission rate is an important quality measure, healthcare professionals may benefit from understanding the costs associated with discharging patients with uncorrected sodium.

Objective

To compare medical costs among hospitalized HF patients discharged with or without corrected sodium.

Methods

An economic model was developed to estimate the costs associated with readmissions for HF patients discharged with and without sodium correction. The goal of the analyses was to measure the difference in readmission rates based on status of sodium correction at discharge as reported by Donalz et al.

Model inputs were based on:

- Healthcare Cost and Utilization Project (HCUP) database, sponsored by the Agency for Healthcare Research and Quality, publically available dataset.
- A real-world data analysis of the Premier Healthcare Database representing 591 hospitals in the US from 2013 and discharged with sodium <135 mmol/L), who were admitted and subsequently discharged with sodium <135 mmol/L (n=1,282 patients with HF (ICD-9 428.xx) were admitted to the hospital.
- On the multivariable logistic regression analyses in Donalz et al., patients who were admitted and subsequently discharged with sodium <135 mmol/L (n= 1,282 patients with HF (ICD-9 428.xx) were admitted to the hospital.
- To translate the risk of readmission into a practical metric such as costs, the current economic model calculated the average cost for patients discharged with and without sodium correction.
- The incremental difference was the economic burden associated with discharging patients with uncorrected sodium.

Model Results

Figure 1: Incremental cost of discharging a patient with uncorrected versus corrected sodium after accounting for higher readmission costs for patients discharged on uncorrected sodium

- Cost per patient discharged with uncorrected sodium
- Cost per patient discharged with corrected sodium
- Incremental costs per patient discharge

Limitations and Conclusions

- Generalizability of results will be influenced by hospital-specific protocols on discharge planning, quality of care, management of HN etc.
- However, the potential for outcomes improvement in the form of Document. 30-day readmissions, results support the value of upfront monitoring and correction of low sodium among patients discharged with and without sodium correction.

Disclosures:

- National Heart, Lung, and Blood Institute.
- National Center for Complementary and Integrative Health.
- North Carolina State University.
- Duke University.
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- Otsuka Pharmaceutical Development & Commercialization, Inc.
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References


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