

- Title** Cost Estimation of Point of Care B-Type Natriuretic Peptide for the Diagnosis of Heart Failure in the Emergency Department: Application to Alberta
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- Reference** IP 25, May 2005. ISBN: 1-894927-08-7 (Print); 1-894927-09-5 (Online) www.ahfmr.ab.ca/programs.php

Aim

To estimate the cost of Biosite Triage Point-of-Care BNP assay, used to rule out congestive heart failure (CHF) from other pulmonary conditions, for patients presenting in Alberta emergency departments (EDs) with acute dyspnea, but who do not have acute myocardial infarction (AMI), renal dysfunction (RD), or unstable angina (UA).

Conclusions and results

Yearly, about 5000 patients in urban settings and 2600 patients in rural settings present at EDs in Alberta with symptoms of acute dyspnea (but without AMI, RD, or UA). In urban settings, the total cost of standard diagnostic protocols was \$4 507 639 per annum. Total savings from reducing the number of echocardiograms (ECHOs) and patient days was \$990 543 per annum (savings from reducing patient days alone was \$207 772). The total add-on cost of BNP testing was \$99 998. In rural settings, the total cost of standard diagnostic protocols was \$2 245 236 per annum. The total savings achieved if BNP testing reduces the number of ECHOs at an urban center was \$65 442. The total add-on cost for BNP testing was \$2646. The results indicate that in one year, BNP testing compared to standard diagnostic protocols could significantly reduce total costs, with greater cost implications in urban settings and in older populations with a higher prevalence of CHF.

Recommendations

The economic utility of BNP testing depends greatly on reducing the number of ECHOs. Hence, strict diagnostic protocols must be followed with clear diagnostic guidelines for physicians so that BNP is used properly. A pilot study of BNP testing may be worth pursuing to produce the information necessary for more definitive conclusions that reflect actual use in Alberta.

Methods

To estimate the cost of BNP testing, several hypothetical cost models were designed to compare potential BNP scenarios with standard clinical diagnostic protocols in Alberta. In urban settings the use of BNP could reduce the number of patients referred for echocardiography (ECHO) and hospitalization days, or reduce the number of hospitalization days alone, or have no impact (add-on cost). In rural settings, BNP could either reduce the number of patients referred to an urban center for ECHO, or have no impact. Resource costs were estimated and valued based on provincial data and available literature. Cost minimization analysis (CMA) was

used to compare the costs for potential scenarios of BNP use.

Further research/reviews required

Economic considerations are secondary to health outcomes. Justification for BNP testing must be predicated on improving clinical care at reduced costs. This analysis is the first step in elucidating the potential cost implications of BNP testing in Alberta EDs. Further study should include not only treatment management and patient monitoring, but also long-term health outcomes and quality of life from a broader societal perspective.

Written by

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