Cost effectiveness analysis of Drotrecogin Alfa (Activated) as a treatment for severe sepsis in hospitalised patients

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ABSTRACT

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INTRODUCTION: Drotrecogin alfa (activated) significantly reduced severe sepsis (SevSep) mortality at 28 days (1). According to the French budget environment, it is mandatory to evaluate its cost effectiveness ratio on a pragmatic basis.

METHODS: All SevSep patients in the Cub-Rea database (1997-99 period) defined according to PROWESS(2) and with a hospital length of stay (LOS) ≥ 24 hours (n = 10 069) were included. The baseline patient’s characteristics are similar to those of the PROWESS criteria study: age (61 years vs 80 years), < 60 years (42 % vs 44 %), and number of organ failure (2.3 vs 2.4). Key patient data recorded: age, gender, type of admission (medical or surgical), admission mode (direct or transfer), number (1,2,3), duration and type of support (respiratory, renal, circulatory) and SAPS II. Stratification according to these criteria and loading of the observed frequencies into a decision-tree conditional probabilities. Relative Risk of death with drotrecogin alfa (activated) estimated according to the observed classification into 11 nice/GISG(3) groups (28 days survival represented by the parametric function of Weibull). SevSep impact on long-term mortality estimated by the Cabi score with 3 hypotheses for life expectancy (LE): Unique LE of 5 years, Mc Cabe > 0 (2 years of survival), Mc Cabe = 0 (4 years LE reduction or half LE reduction versus whole population). Costs estimated by subgroups and by a linear equation (nursing workload, LOS, SAPS II, living or dead status). Calculation of a differential cost effectiveness ratio (Drotrecogin alfa (activated): price: 7 836.95 € for 4 days treatment and a mean patient’s weight of 70 kg) and analysis of Monte Carlo’s type. RESULTS: The expected cost predicted in the model of a SevSep patient treated by drotrecogin alfa (activated) is 34 605.90 €. The survivors LE according to the above hypotheses are 5.0, 10.6, and 6.9 years. Corresponding effectiveness differences in favor of drotrecogin alfa (activated) are 0.35, 0.63, and 0.41 years. The cost per additional year of life saved amounts of 18 446.3 € including all degrees of severity and comorbidity. The sensitivity analysis model shows that with an expected threshold of 53 357.1 € of the bootstrap samples are cost-effective. CONCLUSION: The predicted cost effectiveness ratio of drotrecogin alfa (activated) in adult SevSep patients is much lower than the international range considered as acceptable (55 397.6 €). Drotrecogin alfa (activated) is cost-effective when including patients with all degrees of co-morbidity. REFRENCES: (1) Bernard G. N Engl J Med. 2001; 344: 699-70. - (2) Guidet B. Intensive Care Med 2001; 27; Supp 2 S233. - (3) Misslet B. Risan Urg 1998; 7: 305-74.