

Decision Tree Modeling on the Antidotal Therapy of Acute Paracetamol Poisoning Management

Senarathna SMDKG (1,2,3), Sri Ranganathan S (1), Buckley N (2), Dawson A (2), Fernandopulle BMR (1). 1. Department of Pharmacology, Faculty of Medicine, Colombo, 2. South Asian Clinical Toxicology Research Collaboration, 3. Department of Pharmacology, Faculty of Medical Sciences, University of Sri Jayewardenepura

Introduction and objectives: Acute paracetamol poisoning is an emerging problem in Sri Lanka. Economic evaluation of different treatment options is now considered as an important determinant in designing treatment guidelines. However no health economic evaluation has been done on the antidotal therapy of acute paracetamol poisoning; two antidotes; expensive N-acetylcysteine and cheaper methionine are used in the management. The objective of the current analysis was to identify cost and outcomes of two antidotes and to determine the incremental cost effectiveness ratio (ICER) of using N- acetylcysteine compared to methionine in the management of acute paracetamol poisoning patients in Sri Lanka. **Methods:** Analysis was applied to cases of acute paracetamol poisoning from Sri Lanka and public healthcare system payer perspective was adopted in developing the decision tree model. Costs were collected from follow up of acute paracetamol poisoning cases in Sri Lanka. The effectiveness data were obtained from the literature. The outcome measures were death due to hepatotoxicity (liver transaminases >1000IU). Development of decision tree models and analysis were done using TreeAge Pro 2008. **Results:** Antidotal therapy was considered cost effective, if it gained a year of healthy life for less than the per capita income for a Sri Lankan (LKR 505,995/death prevented). A cost minimisation analysis was carried out for patients presenting within 10hours and methionine, the least costly alternative was selected as the antidote of choice. The sensitivity analysis in all instances chose methionine as antidote of choice. The results for base line data for patients presenting within 10- 24hours gave an ICER of LKR 273,122/death prevented by N- acetylcysteine. The sensitivity analysis results ranged from dominance for methionine to N-acetylcysteine being cost effective. However in most instances the ICER for N- acetylcysteine was lower than the threshold value. The ICER for giving N- acetylcysteine for patients presenting within 10 and 10-24 hours was 606,232. **Conclusion:** post ingestion time is an important determinant of the antidotal therapy in Sri Lanka. Giving N-acetylcysteine to all patients with risk is not cost effective in Sri Lanka. Analysis gave robust results for methionine as the antidote of choice for patients treated within 10 hours. It is cost- effective to treat patients with N- acetylcysteine when presenting after 10 hours and within 24 hours.