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Cost model for management of paracetamol poisoning in Sri Lanka

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Objective: There has been a significant increase in paracetamol poisoning in Sri Lanka. Cost of management of paracetamol poisoning exceeds all other poisonings. There is variable adherence to ideal management prescribed by the National Management Guidelines (NMG) leading to unnecessary and costly transfers to larger hospitals. The objective of this study was to compare actual costs incurred with that of the ideal cost that should have been spent in the management of paracetamol poisoning in rural Sri Lanka.

Method: We prepared models of actual costs incurred and the ideal cost that should have been spent. Data was extracted from two observational studies in two large districts, Kurunegala and Matara of Sri Lanka in 2011 and 2017. The actual model was developed using the following costs: cost for a hospital bed day; cost for health care personals; cost of transfers to tertiary care hospitals and cost of antidotes. We then developed an ideal model in which all patients were considered to have been managed according to the NMG. We factored in the impact of changes of antidote pricing to the models to decide if changes in pricing have an impact on the model.

Results: There were 2670 and 459 paracetamol poisoning admissions in Kurunegala and Matara districts, respectively. Actual per patient cost was $134 in 2011 and $123 in 2017 while ideal cost was $47 in 2011 and $50 in 2017. Had the NMG been followed a total of $181,816 could have been saved in 2011. Despite the reduction of prices of N-acetylcysteine (NAC) in 2017, the savings would still have been $151,535. The main reason for the increased actual cost was hospital bed cost associated with intravenous NAC administration which remained constant throughout. Additional costs were spent on unnecessary transfers to larger hospitals for intravenous NAC administration.

Conclusion: These costs could be reduced by regulating the delivery of care in the rural hospitals. Adherence to the NMG would increase the use of shorter duration oral methionine instead of the longer duration intravenous NAC and thereby reduce hospital bed costs. Regulations to encourage antidote stocking in rural hospitals will further reduce costs associated with transfers.