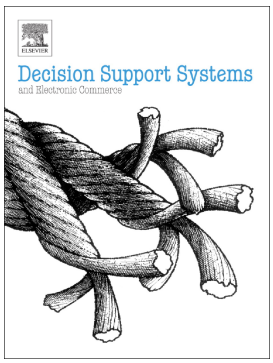

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PII: S0167-9236(17)30236-1
DOI: https://doi.org/10.1016/j.dss.2017.12.007
Reference: DECSUP 12908

To appear in: *Decision Support Systems*

Received date: 17 August 2017
Revised date: 12 December 2017
Accepted date: 12 December 2017

Please cite this article as: Steven Walczak, Vic Velanovich , Improving prognosis and reducing decision regret for pancreatic cancer treatment using artificial neural networks. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Decsup(2017), https://doi.org/10.1016/j.dss.2017.12.007

Improving Prognosis and Reducing Decision Regret for Pancreatic Cancer Treatment Using Artificial Neural Networks

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Abstract

Cancer is a worldwide health problem with extremely high morbidity and mortality. Pancreatic cancer specifically is the fourth leading cause of death by cancer in the United States and is a leading cause of cancer deaths worldwide. The optimal treatment for pancreatic cancer is resection surgery, but even with surgery many patients suffer high morbidity and mortality, leading to regret in physicians over whether or not the optimal course of treatment with regard to the patient's quality of life was made. Patients also suffer regret concerning the morbidity associated with treatment. An artificial neural network is developed to predict 7-month survival of pancreatic cancer patients that achieves over a 91% sensitivity and an overall accuracy above 70%. The artificial neural network outcome predictions may be used as an additional source of information to assist physicians and patients in selecting the treatment that provides the best quality of life for the patient and reduces treatment decision regret.

Keywords: artificial neural network; cancer; pancreas; regret reduction; survival

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