Evaluation of Total Artificial Heart Using Multi-Criteria Decision Analysis

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Abstract: Heart failure is a condition that affects great parts of the world population. Heart transplantation is one of the alternatives to survive heart failure. It is not easy to find the available organ because of the lack of organ donors and the long list of the people expecting heart transplant [1]. An alternative until the organs become available is either the total artificial hearth or a ventricle assisting device. The total artificial heart is used to bridge the time until heart transplantation. There are various types of artificial hearts. In this paper, we compared various TAH devices by creating a database and in order to determine the best device in the market we used a simulation. FUZZY PROMETHEE was used as the methodology. Promising result were achieved with parametric (SynCardia) TAHs. However there are still some problems to overcome. Nevertheless, totally implantable total artificial hearts have a long way to go if they are to replace the natural heart permanently, made for destination therapy. So far, the only commercially approved and found in the market for the patient used is SynCardia TAH:

Keywords: Total artificial heart, Multi-Criteria Decision Analysis

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References

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