

NON-PHARMACEUTICAL TREATMENT FOR SEPTICEMIA/SEPSIS



Problem:

Septicemia/sepsis is a very serious world-wide medical problem. In US alone, there are approximately 2 million infections and 250,000 deaths per year. In 2018 sepsis hospitalization cost to Medicare was \$41.8 Billion.



Current Treatment:

Current guidelines call for the immediate administration of intravenous broad-spectrum antibiotics upon diagnosis. However, antibiotics are not effective for many patients and increasing antibiotic resistance is causing available antibiotics to become less effective.

Non-Pharmaceutical Technology for Septicemia/Sepsis Treatment:



Equipment:

a) Processor Unit – This unit includes integrated circuits (optical sensors) for producing digital pictures of the patient's blood and semiconductor processing units for evaluating the digital pictures through pattern recognition.

b) Cassette – A disposable planar plastic structure which is inserted into the processor unit and is connected by a two-lumen catheter to the patient to receive blood from the patient and then to return processed blood to the patient. The cassette has an array of thin, large area chambers for holding the blood for processing.



Processing Steps:

- 1) Fill the cassette chambers with patient blood.
- 2) Produce a lenseless digital picture of the blood in each chamber.
- 3) Process each digital picture using pattern recognition to identify and locate the pathogen cells in the blood.
- 4) Apply energy such as UV light or electricity to each located pathogen cell to destroy the identified pathogen cells. Alternatively, the pathogen cells can be vented from the blood.
- 5) Return processed blood to the patient from the cassette, fill chambers with new patient blood and repeat the steps of identification and treatment.

Patent Rights



This technology is covered by multiple pending US patent applications which can be extended to include world-wide patent rights.

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