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Richard C Schugart*, richard.schugart@wku.edu, and **Donna Daulton, K Renee Fister, Tennessee Tucker Joyce, Ben Howard, Sashwati Roy and Chandan K Sen.** *Using optimal control theory to identify optimal treatment protocols with oxygen therapy for the treatment of a bacterial infection in a wound.* Preliminary report.

A reduced mathematical model was developed for the treatment of a bacterial infection in a wound using oxygen therapy. Optimal control theory was employed to aid in the identification of optimal treatment protocols for hyperbaric and topical oxygen. The model formulation and preliminary results using optimal control will be presented, while future directions will be discussed. (Received August 07, 2013)