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**Stephen Guffey\***, stephen.guffey956@topper.wku.edu. *Optimal Control of a Parabolic PDE System Arising in Wound Healing*. Preliminary report.

We consider a control problem for a system of four parabolic PDEs. The model describes the behavior of oxygen, neutrophils, bacteria, and chemoattractant in a chronic wound, where the control represents the case of oxygen therapy. We wish to find the optimal level of supplemental oxygen to minimize both the bacteria count in the wound as well as the supplemental oxygen supplied. We discuss the existence of solutions for our system, the existence of an optimal control for our model, as well as the classification of the optimality system. (Received December 30, 2014)