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**Nitin A Krishna\*** (nitin.krishna@live.com), **Hannah M Pennington** and **Richard C Schugart**. *On the practical identifiability of a mathematical model for the interactions of matrix metalloproteinases and their inhibitors in a wound.*

We formulate, quantify, and analyze a mathematical model for the interactions of proteins and cells in the healing of a diabetic foot ulcer. Experimental data for modeling were provided by Muller et al. (2008), a research outcome that collected protein and wound closure data for two patient subgroups: “good healers” and “poor healers”, where classification was based on the rate of ulcer healing. Estimation of model parameters for the two patient subgroups is done in the context of ordinary least squares. However, especially in complex models with sparse data, several sets of parameters may correspond to the same model state. To assess parameter identifiability, we conduct two sensitivity analyses. A classical sensitivity analysis identified and ranked a set of sensitive parameters, while a subset selection used singular value decomposition followed by QR factorization to give a set of parameters sensitive as a group. Results from the classical sensitivity analysis are used in conjunction with the subset selection to determine identifiable parameters. The developed model has clinical applications, such as determining the biological differences between good and poor healers and implementing a personalized approach to diagnosis using model predictability. (Received September 15, 2014)