



Modeling Grade IV Gas Emboli Using a Limited Failure Population Model with Random Effects

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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 50 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. Venous gas emboli (VGE) (gas bubbles in venous blood) are associated with an increased risk of decompression sickness (DCS) in hypobaric environments. A high grade of VGE can be a precursor to serious DCS. In this paper, we model time to Grade IV VGE considering a subset of individuals assumed to be immune from experiencing VGE. Our data contain monitoring test results from subjects undergoing up to 13 denitrogenation test procedures prior to exposure to a hypobaric environment. The onset time of Grade IV VGE is recorded as contained within certain time intervals. We fit a parametric (lognormal) mixture survival model to the intervaland right-censored data to account for the possibility of a subset of cured individuals who are immune to the event. Our model contains random subject effects to account for correlations between repeated measurements on a single individual. Model assessments and cross-validation indicate that this limited failure population mixture model is an improvement over a model that does not account for the potential of a fraction of cured individuals. We also evaluated some alternative mixture models. Predictions from the...



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