

**ABSTRACT****Modeling of Longitudinal Data on Platelet Counts of Dengue Haemorrhagic Fever Patients Using General Linear Mixed Model (GLMM)**

In medical research, eventually researcher using the longitudinal data dealing with repeated measurement in each patient as a subject in several period of time with the quantitate response. General Linear Mixed Model (GLMM) is much more flexible to this situation. Dengue haemorrhagic fever (DHF) is one of health problem in tropical countries, including Indonesia. The main aim of this research was to modeling longitudinal data from platelet counts of DHF patients. This research is non-reactive study by seeing medical record of patients which taken care by DHF in Sidoarjo Regency Hospital from January until April 2013. There are 76 patients from DHF which were classified into grade 1, 2 and 3. Variabels studied are platelet count, grading the severity of DHF, and sex. Estimation of parameter model using two methods, Maximum Likelihood (ML) and Restricted Maximum Likelihood (REML). Mean structure describes different platelet counts each grade the severity of DHF that indicate fixed effect, variance structure describes variation each subjects that indicate random effect and the correlation structure describes the correlation between the 4th, 5th, and 6th the patient has a fever. Analysis of GLMM resulted that grade DHF ( $p = 0,023$ ), interaction of grade DHF with time measurement ( $p = 0,023$ ) and interaction of grade DHF with sex ( $p = 0,001$ ) contributed in model. Based on result it can be concluded, first, the mean platelet count for grade 1 DHF is 50,46 thousands/ $\mu\text{l}$  greater than grade 3 DHF. Second, the mean platelets counts in 4th fever day is 18,75 thousands/ $\mu\text{l}$  for grade 1 and 29,31 thousands/ $\mu\text{l}$  for grade 3 DHF greater than 6th. The last, the mean platelet count for male in grade 1 DHF 23,35 thousands/ $\mu\text{l}$  greater than female. Further research is needed to applied this methode in longitudinal experimental study.

Keywords: general linear mixed model (GLMM), dengue haemorrhagic fever (DHF), platelet count