

**METHODS TO EVALUATE THE RELATIONSHIP BETWEEN SURVIVAL TIMES**

Nicolae Todor<sup>1</sup>, Saplacan Gavril<sup>2</sup>, Dan Radulescu<sup>3</sup>

<sup>1</sup>*Department of Biostatistics and Informatics, Cancer Institute "Ion Chiricuta" Cluj-Napoca, RO,*

<sup>2</sup>*Applied Information Company Cluj-Napoca RO,*

<sup>3</sup>*University of Medicine and Pharmacy "Iuliu Hatieganu" Cluj-Napoca, RO*

For two groups of patients selected by the value of a prognostic factor, the common practice is to evaluate the difference by the logrank test with some variants. Now if we have a set of indexed rules that link the survival times of the two groups it is natural to choose the rules which minimize the logrank test. To find this minimum is a difficult task in the general case because the functions are not analytical ones. Our strategie is to transform the observations of one group by a set of indexed rules to identifie rules that minimize the log rank test. If T is survival time for one group, let say basic group, we solved the problem for the sets of rules as  $\{aT|a \text{ real value}\}$ ,  $\{a+T \text{ a real value}\}$  and  $\{a+bT| a,b \text{ real value}\}$ . Mathematical foundations for an algorithm and a generalization for  $\{ag(T)| a \text{ real value}\}$ ,  $\{a+g(T)| a \text{ real value}\}$  and  $\{a+bg(T)| a,b \text{ real value}\}$  with  $g(.)$  an increasing function are presented. Some examples solved by Mathematica programs are also presented.