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Survival Analysis
Biostatistics 140.641

Problem Set 4

— Due March 9, 2004.

1. The following data are the remission times of 42 patients with acute leukemia: 6MP (mercaptopurine) vs placebo. Reference: Freireich et al. (1963) Blood, p699.

Placebo: 1, 1, 2, 2, 3, 4, 4, 5, 5, 8, 8, 8, 8, 11, 11, 12, 12, 15, 17, 22, 23

6MP: 6, 6, 6, 7, 10, 13, 16, 22, 23, 6⁺, 9⁺, 10⁺, 11⁺, 17⁺, 19⁺, 20⁺, 25⁺, 32⁺, 32⁺, 34⁺, 35⁺.

(a) Compute the log-rank test and the (one-sided) p-value. Do you reject the hypothesis that there is no difference between 6-MP and placebo groups? Explain.

(b) Compute the Gehan test and the (one-sided) p-value. Interpret your results.

(c) Compute the Taron-Ware test and the (one-sided) p-value. Interpret your results.

2. Consider the following hypothetical clinical trial data.

Treatment A: 2, 3, 4⁺, 6, 12⁺, 18⁺, 20

Treatment B: 7⁺, 12, 17⁺, 25, 29⁺, 30⁺

(a) Compute the log-rank test and the (2-sided) p-value. Do you reject the hypothesis that there is no difference between treatment A and treatment B? Explain.

(b) Compute the Gehan test and the (2-sided) p-value. Interpret your results.

(c) Compute the Taron-Ware test and the (2-sided) p-value. Interpret your results.