STA 5364, Report 3.6

Carson Slater *Baylor University*

Problem

Consider the data reported in section 1.6 on the times until staphylococcus infection of burn patients (see our web page).

(a)

Using the log-rank test, test the hypothesis of no difference in the rate of staphylococcus infection (D3) between patients whose burns were cared for with a routine bathing care method versus those whose body cleansing was initially performed using 4% chlorhexidine gluconate (Z1). Use a two-sided test and a 0.05 significance level.

```
## Log-rank test results:

## Call:
## survdiff(formula = surv_obj ~ Z1, data = burn)
##
##       N Observed Expected (O-E)^2/E
## Z1=0 70       28     21.4      2.07
## Z1=1 84       20     26.6      1.66
##      (O-E)^2/V
## Z1=0      3.79
## Z1=1      3.79
##
##  Chisq= 3.8  on 1 degrees of freedom, p= 0.05

##
## P-value: 0.05148488

##
## Conclusion: Fail to reject the null hypothesis. There is no evidence
## of a difference in the rate of staphylococcus infection between the
## two groups.
```

(b)

Repeat the test using Gehan's test.

```
##
## Gehan's test results:

## Call:
## survdiff(formula = surv_obj ~ group, data = burn, rho = 1)
##
##                      N Observed
## group=Routine       70     23.3
```

```
## group=Chlorhexidine 84     17.1
##                      Expected
## group=Routine           17.9
## group=Chlorhexidine     22.5
##                      (O-E)^2/E
## group=Routine            1.58
## group=Chlorhexidine      1.26
##                      (O-E)^2/V
## group=Routine            3.38
## group=Chlorhexidine      3.38
##
##  Chisq= 3.4  on 1 degrees of freedom, p= 0.07

##
## P-value (Gehan's test): 0.06600395

##
## Conclusion: Fail to reject the null hypothesis. There is no evidence
## of a difference in the rate of staphylococcus infection between the
## two groups.
```

(c)

Repeat the test using the Tarone and Ware weights.

```
##
## Tarone and Ware test results:

## Call:
## survdiff(formula = surv_obj ~ group, data = burn, rho = 0.5)
##
##                       N Observed
## group=Routine        70     25.4
## group=Chlorhexidine 84     18.5
##                      Expected
## group=Routine           19.5
## group=Chlorhexidine     24.4
##                      (O-E)^2/E
## group=Routine            1.80
## group=Chlorhexidine      1.44
##                      (O-E)^2/V
## group=Routine            3.59
## group=Chlorhexidine      3.59
##
##  Chisq= 3.6  on 1 degrees of freedom, p= 0.06

##
## P-value (Tarone and Ware test): 0.05824773
```

```
##
## Conclusion: Fail to reject the null hypothesis. There is no evidence
## of a difference in the rate of staphylococcus infection between the
## two groups.
```