P8130 Recitation 5 – Practice Problems

October 10, 2017

Problem 1

Rosner 8th edition, 10.27-10.28

Diabetes. Improving control of blood-glucose levels is an important motivation for the use of insulin pumps by diabetic patients. However, certain side effects have been reported with pump therapy. Table 10.26 provides data on the occurrence of diabetic ketoacidosis (DKA) in patients before and after start of pump therapy [12].

Table 10.26   Occurrence of DKA in patients before and after start of insulin-pump therapy

	Before pump therapy	
After pump therapy	No DKA	DKA
No DKA	128	7
DKA	19	7

10.27 What is the appropriate procedure to test whether the rate of DKA is different before and after start of pump therapy?

10.28 Perform the significance test in Problem 10.27, and report a p-value.

Problem 2

Rosner 8th edition, 10.29-10.31

Renal Disease. A study group of 576 working women 30–49 years of age who took phenacetin-containing analgesics and a control group of 533 comparably aged women without such intake were identified in 1968 and followed for mortality and morbidity outcomes. One hypothesis to be tested was that phenacetin intake may influence renal (kidney) function and hence have an effect on specific indices of renal morbidity and mortality. The mortality status of these women was determined from 1968 to 1987. The researchers found that 16 of the women in the study group and 1 of the women in the control group died, where at least one cause of death was considered renal [13].

10.29 Test for differences in renal mortality between the two groups in either direction, and report a two-tailed p-value. The cohort was also followed for total mortality. The researchers found that 74 women in the study group died, compared with 27 in the control group.

10.30 What statistical test should be used to compare the total mortality experience of the study group with that of the control group?

10.31 Implement the test in Problem 10.30, and report a p-value.