APPLIED MATHEMATICS COLLOQUIUM

STATISTICAL INFERENCE ABOUT QT SIGNALS

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Abstract:

Q and T are two points on an electrocardiogram. The duration of the interval between them, QT interval, is a measure of the time required for polarization and depolarization of the heart's ventricles. In the "long QT syndrome" the QT interval is prolonged; people with this syndrome are susceptible to an abnormally rapid heart rhythm (arrhythmia) called "Torsade des pointes", which can lead to sudden death. Within the pharmaceutical industry, QT studies that indicate significant QT prolongation are sufficient for a company to discontinue development of a compound.

In this talk, I will discuss recent proposals comparing drug QT with placebo QT in QT studies, where the emphasis is on attempting to show that drug is "non-inferior" to placebo. One of these involves finding an approximate confidence interval for the maximum (over the p time points in the study) mean difference in QT between drug and placebo. Recast as a statistical problem, this parameter is the maximum coordinate of the mean vector of a normal distribution. Another approach relies on a more standard testing problem, which is shown to be both an intersection union test and the likelihood ratio test.

MONDAY, SEPTEMBER 26, 2005
4:30 PM
Building 2, Room 105

Reception at 4:00 PM outside Room 2-105.