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APPENDIX A

Use of the logistic model

The logistic model has been recognized as being very useful for studies in which there are only two outcomes, for example, death or survival (*–6*) In this use of the model it is assumed that the probability of death, P, depends on m independent variables, X_1, X_2, * * *, Xp, according to the relation

$$P=\frac{1}{1+c^{-A}}$$

where

$$A=b_0+b_1X_1+b_2X_2 \ldots +b_mX_m$$

On each subject in the UGDP trial, the data available were the m independent variables and an outcome variable that was given the value 0 or 1 according to whether the patient survived or died The multiple regression equation was fitted to relate the probability of death to the independent variables A maximum likelihood procedure was used to find estimates of the regression coefficients b_0, b_1, . . . bp

Groups of people such as those receiving a treatment or those from a particular clinic were incorporated into the model by the inclusion of an indicator variable that, for a given individual, took the value 1 if the indivudual was in that group, and 0 otherwise In order to avoid redundancy, there must be one fewer variable for clinics than there were clinics, and so for other sets of categories To allow for the varying lengths of follow-up, potential length of follow-up (ie, the length of time between entry into the study and the end of the study) was entered as a covariable in the regression.

As a test of the various covariables in the logit regression, the likelihood ratio χ^2 was computed. The likelihood ratio χ^2 can be computed for a set of parameters, β, by comparison with a set of parameters β^* to which, under the null hypothesis,