**SUPPLEMENTAL DIGITAL CONTENT 1**

**Appendix:** Model Selection Procedures.

We examined candidate GEE logistic regression models in separate random halves of the sample, focusing on evaluation of potential interaction effects. A baseline model included all main effects (gender, race/ethnicity, risk group, age group, CD4 history group, and site); interaction effects were added to this model. Because the set of risk group indicators was not jointly significant in the main effects model (χ2=8.27, df=4, p=0.08), we did not consider interactions involving risk group. In phase one, we examined three three-way interactions between calendar year, CD4 history, and each remaining sociodemographic characteristic. In phase two, we added each of 7 two-way interactions one at a time to the main-effects model. A provisional model retained all individually significant (p<0.05) interactions in this phase. In phase three, the remaining (phase two non-significant) interaction effects were added one at a time to the provisional model.

Results were similar for each half-sample (Table A). None of the three-way interactions between year (represented by a linear term), CD4 history group, and patient characteristic (gender, race/ethnicity, or age) was statistically significant in either half-sample. When tested individually, the same three two-way interaction effects (CD4 by year, age by year, age by CD4) reached significance in each half-sample. The remaining two-way interaction terms were added separately to a model including these 3 interaction effects; of these remaining two-way interactions, none were significant in both half-samples. Therefore, the final model included only the 3 interaction effects that were significant at the end of phase two.

Appendix Table. Tests of Interaction Effects

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Sample 1 Phase 1** | **Sample 1 Phase 2** | **Sample 1**  **Phase 3** | **Sample 2**  **Phase 1** | **Sample 2**  **Phase 2** | **Sample 2**  **Phase 3** | **Full**  **Sample** |
| CD4 by Year  df=3 |  | 25.24  p<0.001 | **25.85**  p<0.001 |  | 38.96  p<0.001 | **47.49**  p<0.001 | 66.94  p<0.001 |
| Gender by Year  df=1 |  | 0.54  p=0.46 | 1.02  p=0.31 |  | 0.01  p=0.90 | 0.02  p=0.64 | --- |
| Race/Ethnicity by Year  df=2 |  | 1.68  p=0.43 | 2.48  p=0.29 |  | 4.78  p=0.09 | 5.71  p=0.06 | ----- |
| Age by Year  df=3 |  | 8.47  p=0.04 | **8.55**  p=0.04 |  | 10.99  p=0.01 | **13.45**  p=0.004 | 17.36  P<0.001 |
| Gender by CD4  df=3 |  | 2.18  p=0.54 | 1.93  p=0.59 |  | 7.76  p=0.05 | 6.81  p=0.08 | ---- |
| Race/Ethnicity by CD4  df=6 |  | 11.56  p=0.07 | 9.88  p=0.13 |  | 7.79  p=0.25 | 8.40  p=0.21 | ---- |
| Age by CD4  df=9 |  | 27.37  p=0.001 | **25.52**  p=0.002 |  | 30.61  p<0.001 | **38.81**  p<0.001 | 54.42 p<0.001 |
| Gender by CD4 by Year  df=3 | 1.45  p=0.69 | ---- | ---- | 4.93  p=0.18 | ---- | ---- | ---- |
| Race by CD4 by Year  df=6 | 5.56  p=0.47 | ---- | ---- | 0.10  p=1.00 | ---- | ---- | ---- |
| Age by CD4 by Year  df=9 | 10.65  p=0.30 | ---- | ---- | 11.71  p=0.23 | ---- | ---- | ---- |

Note: Entries are values of chi-square statistic for Wald tests of significance, with associated p-value.

In phase 2, each interaction effect was tested separately after being added to a model with all main effects.

In Phase 3, the model included 3 interaction effects significant in phase 2. Bold font reports tests of significance for a model containing all 3 of these effects. The remaining interactions were added separately to this model and tested individually.