

Sex Pro: Development and Validation of a Personalized HIV Risk Assessment Tool for Men Who Have Sex With Men in EXPLORE and HPTN 061

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Introduction

- Personalized risk assessments may help in targeting HIV prevention interventions such as Pre-exposure Prophylaxis (PrEP).
- Computer-based interventions have been shown to increase knowledge about HIV and other STIs, self-efficacy, and safer-sex intentions.
- Interventions that are individually tailored tend to be the most successful.
- The objective of this analysis is to determine the performance of a personalized HIV risk assessment tool for men who have sex with men (MSM) and validate it among a modern cohort of Black MSM, the group with the highest HIV incidence in the US.

Methods

- Two efficacy trials of MSM in the US from 1998 through 2003, (EXPLORE behavioral trial and VAX004 vaccine trial) were used to develop and initially validate the risk model.
- The self-reported risk behaviors reported for the 6 months preceding each EXPLORE visit were treated as time-dependent covariates, updated at each visit, and used to predict whether or not seroconversion was detected at that same visit.
- We used logistic models to estimate HIV seroconversion risk based on demographics and established behavioral risk factors.
- The HIV Prevention Trials Network (HPTN) 061, which enrolled Black MSM from 2009-2010, was used as a contemporary validation cohort.
- There were 28 HIV seroconversions among 1,164 initially HIV-negative Black MSM in HPTN 061 who were eligible for follow-up and included in this analysis.
- To assess model fit, predicted HIV seroconversion risk was compared to observed risk, stratified by deciles.
- Model fit was evaluated using the C-statistic (>70% good fit; and >80% strong fit).

References

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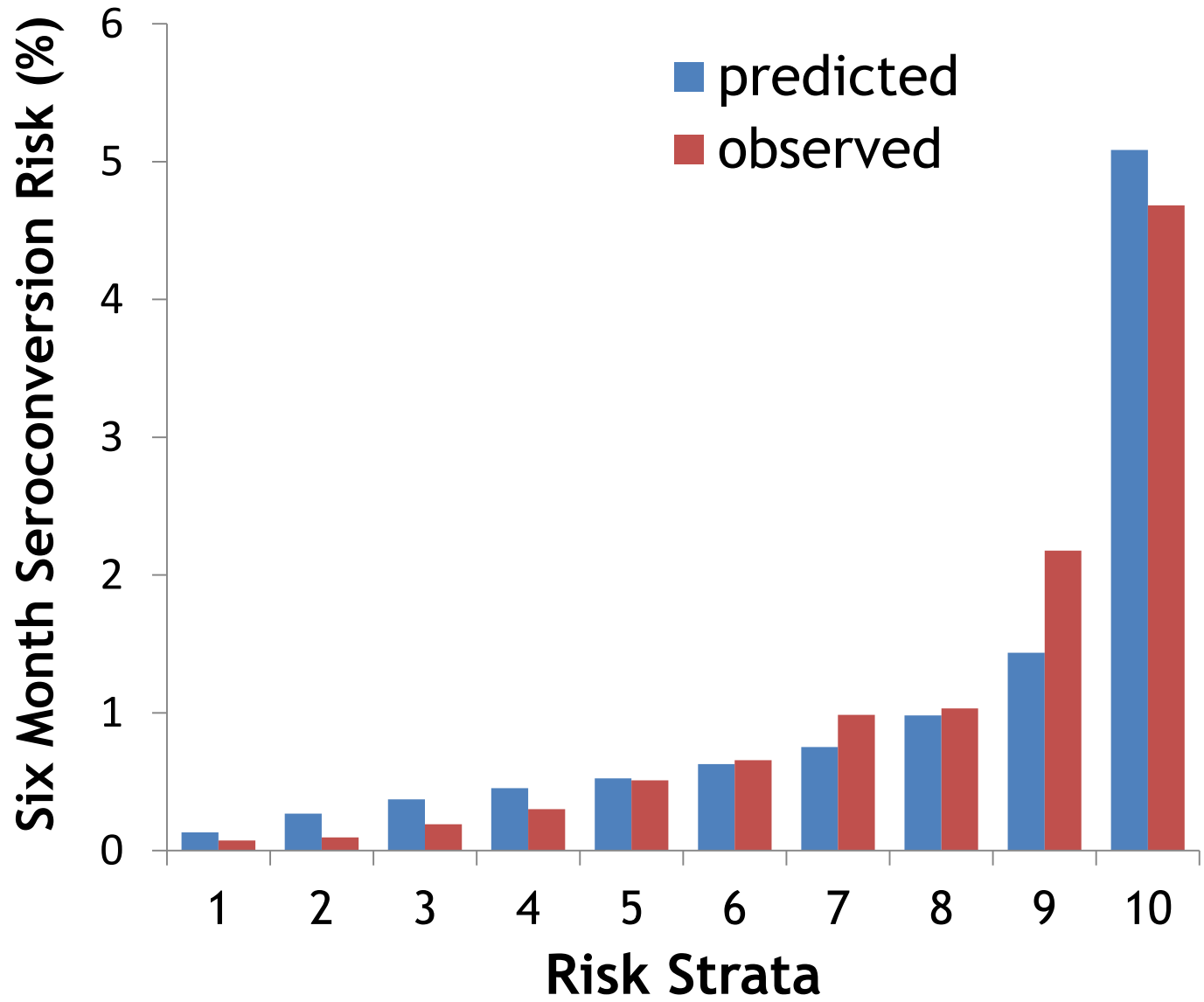
Results

Sex Pro Model Variables

Demographics
• Age (< 35/>35)
• Race (Black/non-Black)
• Ethnicity (Latino/non-Latino)
Risk Behavior
• Number of condomless receptive anal sex episodes with HIV Positive/Unknown status partners.
• Number of receptive anal episodes with a condom with HIV Positive/Unknown partners.
• Number of condomless insertive anal sex episodes with HIV Positive/Unknown partners.
• Number of HIV negative partners.
• One HIV negative partner only. (Yes/No)
• Heavy alcohol use. (Yes/No)
• Amphetamine use. (Any/None)
• Popper use. (Any/None)
• STI diagnosis. (syphilis, GC, CT) (Yes/No)

Development Cohort – EXPLORE

- C-statistic: 79.5%



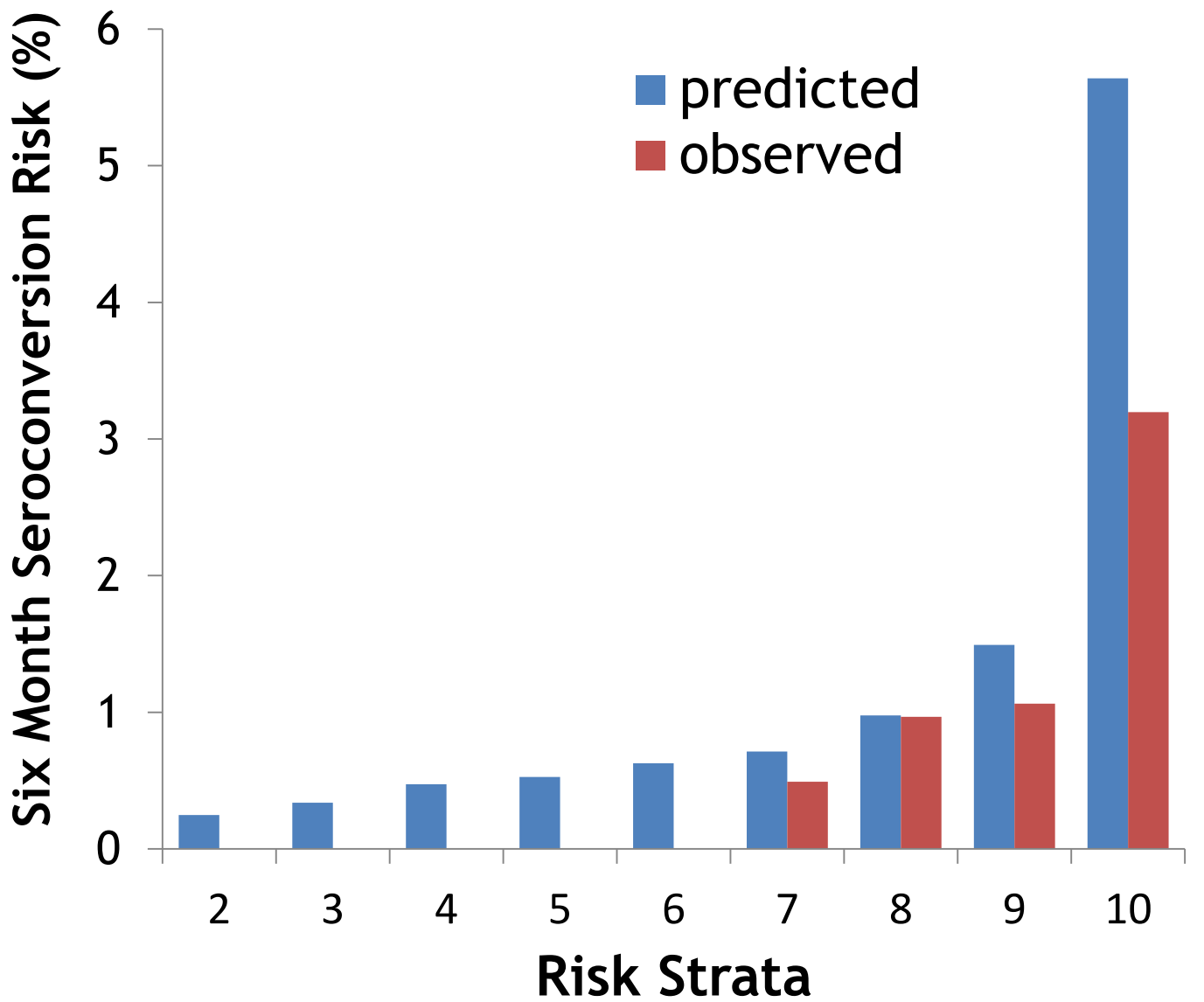
Sex Pro Score HIV Risk Prediction in HPTN 061

Sex Pro Score	Sensitivity (%)	Specificity (%)
<10	81.5	56.7
11	81.5	51.6
12	81.5	48.8
13	81.5	43.0
14	92.6	32.1
15	92.6	26.6
16	100	8.6
17	100	8.1
18	100	6.3
19	100	0

- The Sex Pro score is on a 1-20 scale. Higher scores reflect higher levels of protection.

Validation Cohort – HPTN 061

- C-statistic: 73.2%



Sexual Health Promotion (Sex Pro) Score



Conclusions

- We developed and validated a risk assessment model for MSM which can be used to provide individualized feedback on HIV risk.
- The model retained good ability to distinguish levels of HIV risk in a recent cohort of Black MSM.
- All HIV seroconversions in HPTN 061 occurred in the top 4 deciles of calculated risk - corresponding to Sex Pro scores below 16 (on 1-20 scale).
- The model has been developed into a personalized, interactive, computer-based HIV risk assessment tool for MSM.
- This tool may be useful for improving awareness of HIV risk among MSM, risk stratification by providers, and uptake of HIV prevention interventions including PrEP.

Acknowledgments

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