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BACKGROUND

A risk score model incorporating sexual behaviour, circumcision status, viral load and genital ulcer disease has been described for the evaluation of risk of HIV transmission within sero-discordant couple cohorts¹. The aim of this study was to assess the feasibility of extending the model for use amongst a cross section of individuals attending a sexual health clinic for HIV testing, and to assess the relationship between calculated scores and HIV status at attendance.

METHODS

Between October 2010 and May 2011 individuals requesting HIV testing at a London sexual health service were prospectively recruited to a validation study of a HIV point of care test (POCT). As a sub-study participants self-completed a paper based questionnaire prior to HIV test results examining their sexual behaviour during the three months prior. Responses were linked to HIV and STI results.

A modified algorithm¹ was developed incorporating the risk per sexual act (defined by BHIVA PEP guidelines) local HIV prevalence, partner viral load, active genital ulcer disease, history of herpes (surrogate for herpes serology) and circumcision status as multipliers.

Calculating risk for a single act

$$R_a = \beta_{type} \times A_{VL} \times Y_{GUD} \times \pi_{HSV-2} \times \Psi_{circ} \times P_{prevalence}$$

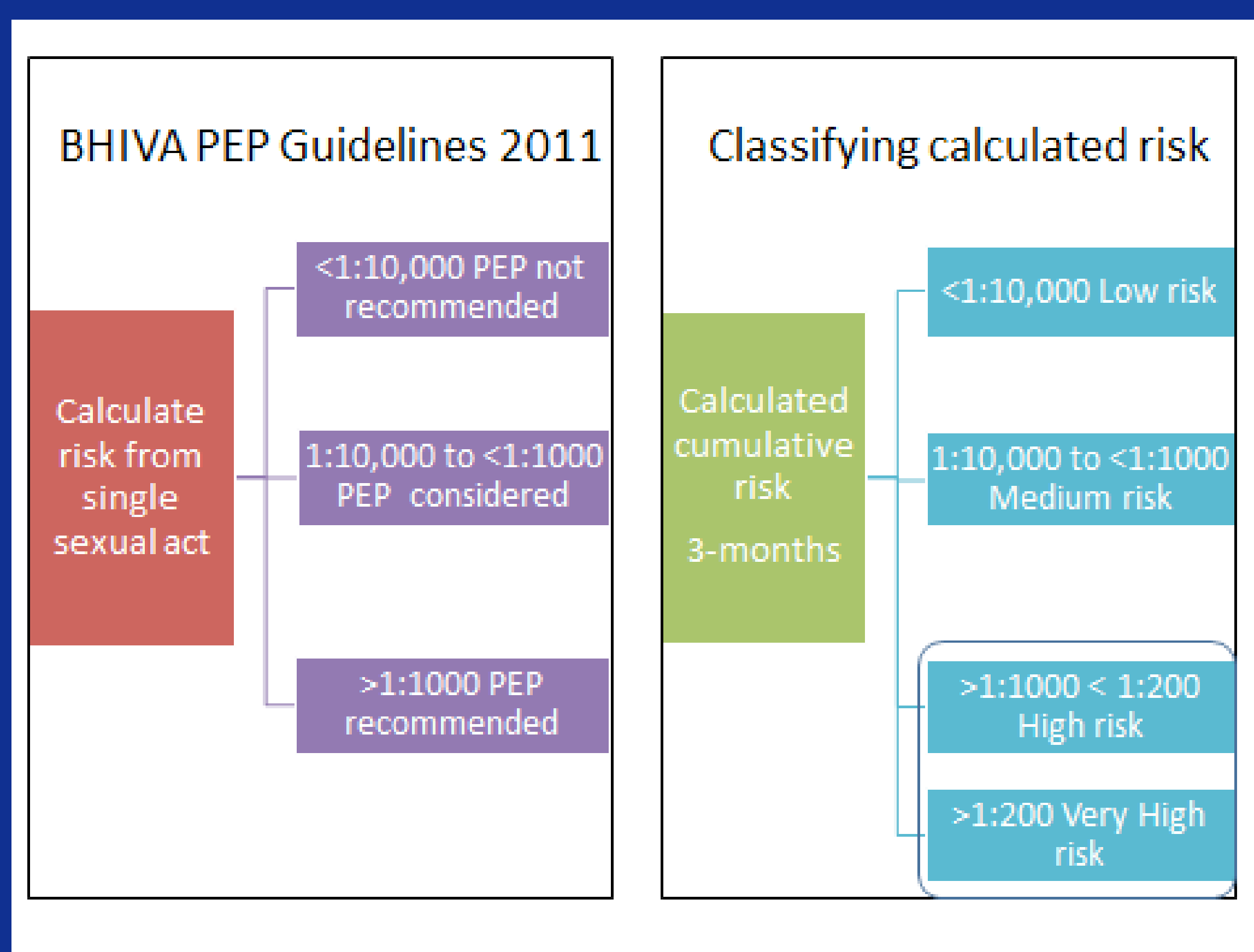
β_{type} – refers to the risk per type of sex act (BHIVA PEP guidelines²)

Calculating cumulative risk over 3 months

$$R_{Risk\ Score} = 1 - ((1 - R_{Partner1}) \times (1 - R_{Partner2}) \times (1 - R_{Partner3}) \text{ etc})$$

Cumulative risk scores over the three months were calculated in Microsoft Excel and categorised as per the thresholds defined in the BHIVA post exposure prophylaxis guidelines², see Figure 1 (low risk score <1/10,000; medium risk 1/10,000 – 1/1000; high risk 1/1,000-1/200; very high risk >1/200). Exact logistic regression was performed in STATA 12 to assess associations between calculated risk score and HIV status.

FIGURE 1



RESULTS

625/985 (63.5%) participants within the POCT study sufficiently completed the questionnaire to allow calculation of a risk score of whom 554 (88.6%) were men (see table 1 for demographics). The median age of participants was 30.5 years old and 84.5% were identified as MSM. 12/625 (1.9%) screened HIV positive at participation.

Calculated cumulative risk scores ranged from zero (where the participant reported no unprotected sex) to a maximum of just over 1/5 (21%) of testing HIV positive, see Figure 2. Participants with scores in the 'high risk' group (>1/1000 & <1/200) had increased odds of being diagnosed HIV positive at study participation compared to those with scores in the 'low risk' group (odds ratio = 5.47, p = 0.04). Those with calculated scores in the 'very high risk' range (>1/200) had even greater odds of HIV diagnosis at participation (odds ratio = 12.81, p=0.04) see Figure 3.

REFERENCES

1. Fox et al: AIDS 2011 May 15;25(8):1065-82
2. Benn et al: Int J STD AIDS. 2011 Dec;22(12):695-708

TABLE 1

Demographics	Frequency (column %)
Sex	
Female	71 (11.4)
Male	554 (88.6)
Total	625
Risk factor	
Heterosexual	89 (14.2)
IDU	2 (0.3)
MSM	528 (84.5)
Not Known	6 (1.0)
Total	625
Born in the UK	
No	325 (53.0)
Yes	288 (47.0)
Total	613
	Median (IQR)
Age at participation (years)	30.5 (26.4-38.8)

FIGURE 2 – Distribution of risk scores in those with score >0 (n=370)

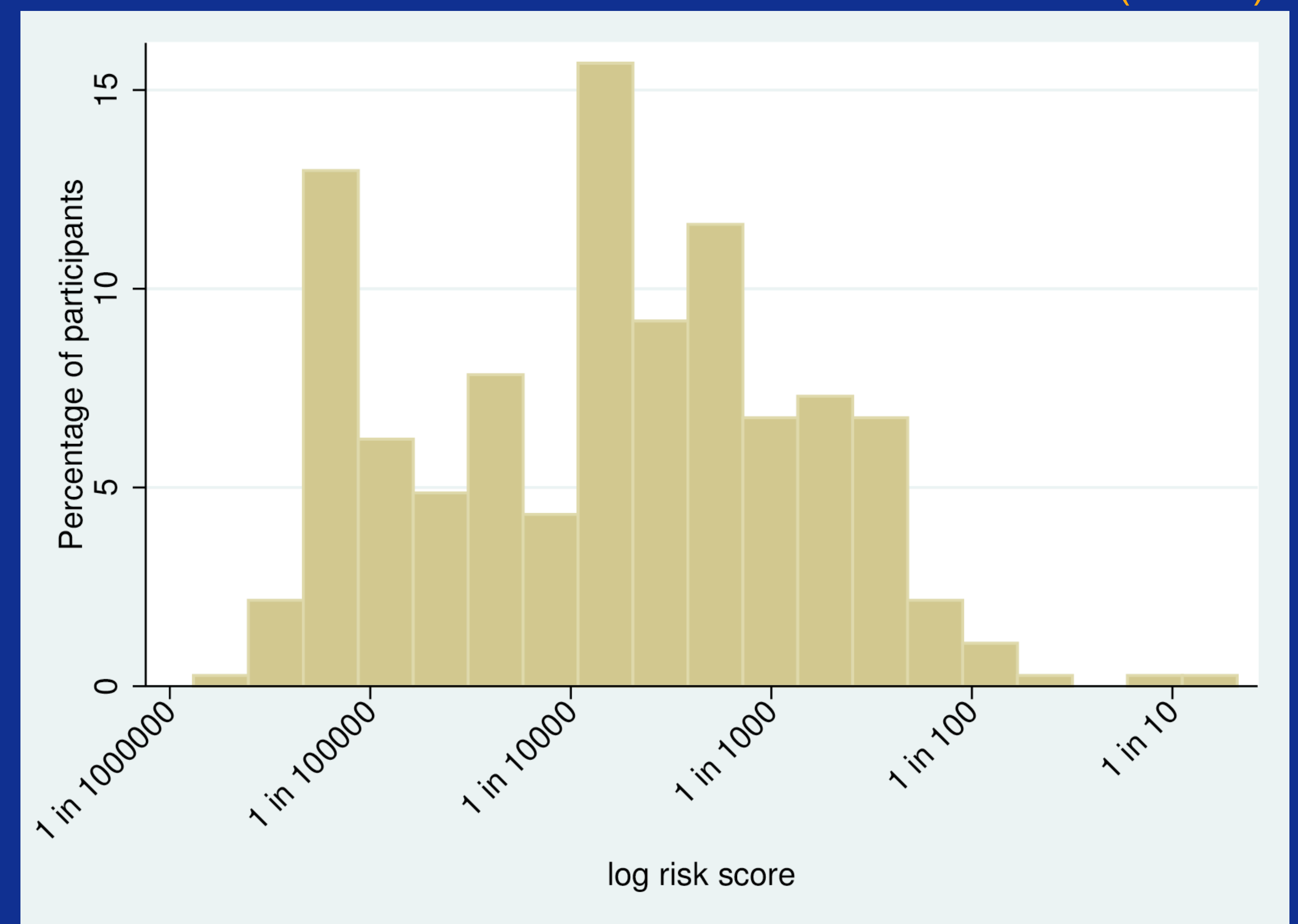
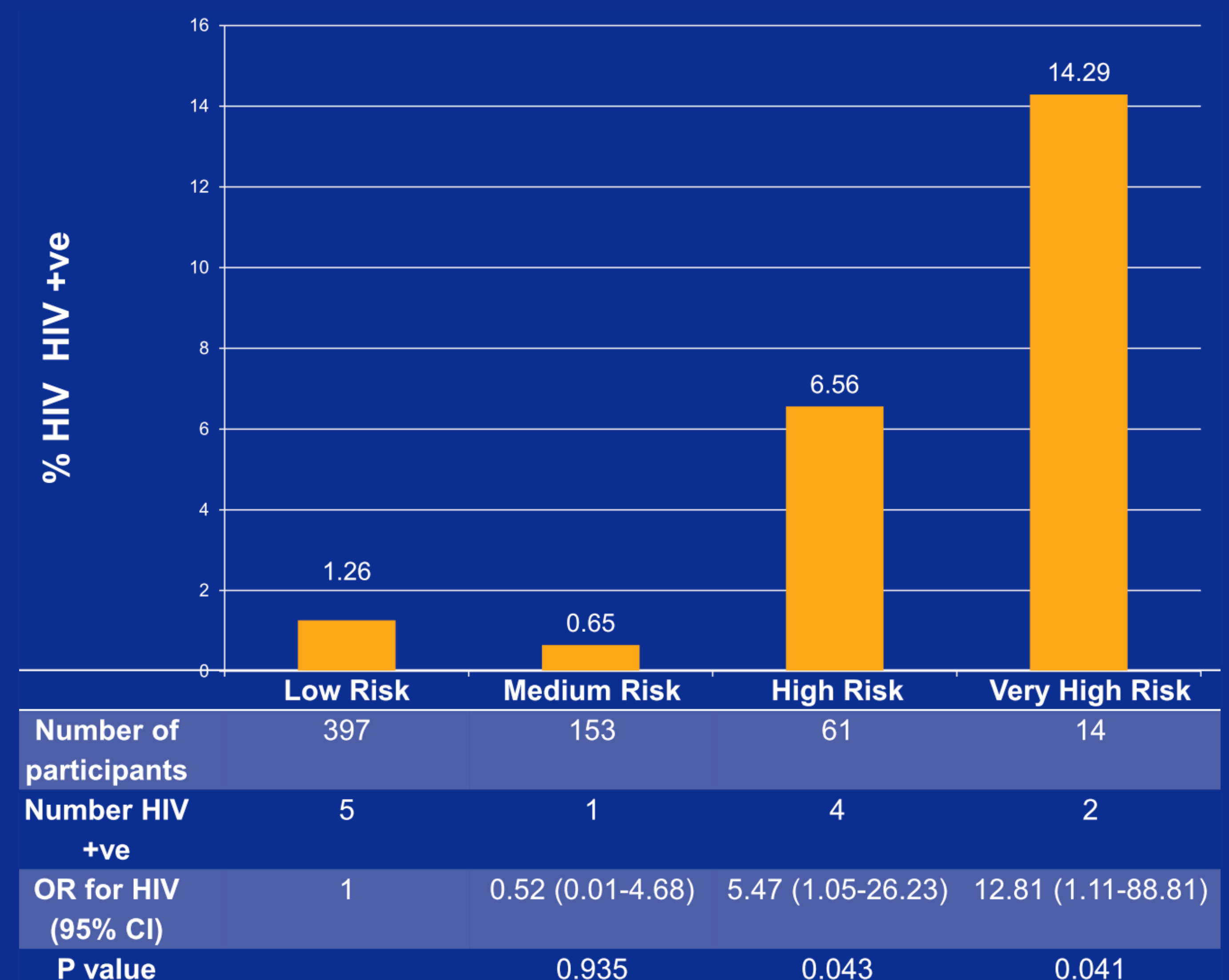


FIGURE 3 - % Participants testing HIV positive by risk score



Conclusions

Calculation of HIV risk scores is feasible using a self-completed questionnaire within a sexual health clinic at a single patient visit. Although the numbers of HIV positive individuals within this sample were small calculated scores showed utility in the estimation of risk of HIV infection.