Supplementary file 2. WinBUGS code.

Bayesian Poisson model with adjustment for unmeasured confounder (insufficient knowledge about HIV transmission routes) based on the second expert's priors.

α: NBT for HIV; β: high risk injection; γ: history of imprisonment in the past 3 months; δ: age; ε: education; η: gender; λ: history of imprisonment in the past 3 months at baseline; φ: HIV testing at baseline

```
model {
for(i in 1:N) {
α[i]~dpois(mu[i])
log(mu[i])<-b0+b1* β[i]+b2* γ[i]+b3* δ[i]+b4* ε[i]+b5* η[i]+b6* λ[i]+b7* φ[i]+u[group[i]]
}
##M Groups
for (j in 1:M) {
u[j] ~ dnorm(0.0,τ) }
b0~ dnorm(0.0,1.0E-6)
…
b7~ dnorm(0.0,1.0E-6)
1/τ~ dgamma(0.001,0.001)
### Estimation of the relation between insufficient knowledge and NBT for HIV (RR)
##ω~ dnorm(mu, percision)
ω~ dnorm(0.85237405, 6.7026589)
### Estimation of insufficient knowledge prevalence in the exposed and unexposed strata
π~ dbeta(24.20208, 56.47152)
ρ~ dbeta(29.38824, 166.53336)
### Estimation of unknown bias correction factor
bias<-((1- π)+(exp(ω)*( π)))/((1- ρ)+(exp(ω)*( ρ)))
```

###Estimation of risk ratio uncorrected for confounding by insufficientknowledge about HIV transmission routes

RR<-exp(b1)

Estimation of risk ratio adjusted for insufficient knowledge about HIV transmission routes

RR.adj<-RR/bias

}

Specification of Initials

list(b0=0, b1=0, b2=0, b3=0, b4=0, b5=0, b6=0, b7=0, ω =0, π =0, ρ =0, τ=1,

u=c(0, 0, …., 0))