**Supplementary data 1: R scripts added as separate files**

**JAGS script:**

###Model correcting for Differential Verification Bias###

model

{

###Prior distributions###

phi ~ dbeta(1,1)

ST ~ dbeta(1,1)

CT ~ dbeta(1,1)

SR1 ~ dbeta(151.125,3.875) # Sensitivity range R1: 95-100%

CR1 ~ dbeta(151.125,3.875) # Specificity range R1: 95-100%

SR2 ~ dbeta(31.5,3.5) # Sensitivity range R2: 80-100%

CR2 ~ dbeta(58.1,24.9) # Specificity range R2: 40-60%

VT1R1 ~ dunif(0,1)

VT0R1 ~ dunif(0,1)

VT1R2 ~ dunif(0,1)

VT0R2 ~ dunif(0,1)

###Probability data###

p1 <- phi\*ST+(1-phi)\*(1-CT)

p2 <- (SR1\*phi\*ST/(phi\*ST+(1-phi)\*(1-CT))+(1-CR1)\*(1-phi)\*(1-CT)/(phi\*ST+(1-phi)\*(1-CT)))

p3 <- (SR1\*phi\*(1-ST)/(phi\*(1-ST)+(1-phi)\*CT)+(1-CR1)\*(1-phi)\*CT/(phi\*(1-ST)+(1-phi)\*CT))

p4 <- (SR2\*phi\*ST/(phi\*ST+(1-phi)\*(1-CT))+(1-CR2)\*(1-phi)\*(1-CT)/(phi\*ST+(1-phi)\*(1-CT)))

p5 <- (SR2\*phi\*(1-ST)/(phi\*(1-ST)+(1-phi)\*CT)+(1-CR2)\*(1-phi)\*CT/(phi\*(1-ST)+(1-phi)\*CT))

###Likelihood observed data###

#Stage 1

T1 ~ dbin(p1,n)

#Verification Stage

nT1R1 ~ dbin(VT1R1,T1)

n0 <- n-T1

nT0R1 ~ dbin(VT0R1,n0)

nT1R2 ~ dbin(VT1R2,T1)

nT0R2 ~ dbin(VT0R2,n0)

#Stage 2

T1R11 ~ dbin(p2,nT1R1)

T0R11 ~ dbin(p3,nT0R1)

T1R21 ~ dbin(p4,nT1R2)

T0R21 ~ dbin(p5,nT0R2)

#Predictive values

PPVT <- ST\*phi/(ST\*phi+(1-CT)\*(1-phi))

NPVT <- CT\*(1-phi)/(CT\*(1-phi)+(1-ST)\*phi)

#Accuracy measures T with respect to Reference test 1

STR1 <- p2\*p1/(p2\*p1+p3\*(1-p1))

CTR1 <- (1-p3)\*(1-p1)/((1-p2)\*p1+(1-p3)\*(1-p1))

PPVTR1 <- p2

NPVTR1 <- 1-p3

#Accuracy measures T with respect to Reference test 2

STR2 <- p4\*p1/(p4\*p1+p5\*(1-p1))

CTR2 <- (1-p5)\*(1-p1)/((1-p4)\*p1+(1-p5)\*(1-p1))

PPVTR2 <- p4

NPVTR2 <- 1-p5

}