

6 WinBUGS code for network meta-analysis for value of information analyses (A8)

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# Binomial likelihood, logit link
# Random effect model, multi-arm trials
model{
# *** PROGRAM STARTS
for(i in 1:ns){
# LOOP THROUGH STUDIES
  w[i,1] <- 0
# adjustment for multi-arm trials is zero for control arm
  delta[i,1] <- 0
# treatment effect is zero for control arm
  mu[i] ~ dnorm(0,.0001) #
# vague priors for all trial baselines
  for (k in 1:na[i]) {
# LOOP THROUGH ARMS
    r[i,k] ~ dbin(p[i,k],n[i,k])
# binomial likelihood
    logit(p[i,k]) <- mu[i] + delta[i,k] #
# model for linear predictor
    rhat[i,k] <- p[i,k] * n[i,k]
# expected value of the numerators
    dev[i,k] <- 2 * (r[i,k] * (log(r[i,k])-log(rhat[i,k])))
#Deviance contribution
    + (n[i,k]-r[i,k]) * (log(n[i,k]-r[i,k]) - log(n[i,k]-rhat[i,k])))
  }
  resdev[i] <- sum(dev[i,1:na[i]]) # summed residual
# deviance contribution for this trial
  for (k in 2:na[i]) { #
# LOOP THROUGH ARMS
    delta[i,k] ~ dnorm(md[i,k],taud[i,k]) # trial-
# specific LOR distributions
    md[i,k] <- d[BBPop[i]+1,t[i,k]] - d[BBPop[i]+1,t[i,1]] + sw[i,k]
# mean of LOR distributions (with multi-arm correction)
    taud[i,k] <- tau[BBPop[i]+1]*2*(k-1)/k
# precision of LOR distributions (with multi-arm correction)
    w[i,k] <- (delta[i,k] - d[BBPop[i]+1,t[i,k]] + d[BBPop[i]+1,t[i,1]])
# adjustment for multi-arm RCTs
    sw[i,k] <- sum(w[i,1:k-1])/(k-1) #
# cumulative adjustment for multi-arm trials
  }
}
#
totresdev <- sum(resdev[]) #Total
# Residual Deviance

```

```
d[1,1]<- 0; d[2,1]<-0 #
treatment effect is zero for reference treatment
for (j in 1:2){
    #j=1 other surgery, j=2 BBpop surgery
    for (k in 2:nt) { d[j,k] ~ dnorm(0,.0001)} # vague priors for
treatment effects
    sd[j] ~ dunif(0,2)
    tau[j] <- pow(sd[j],-2)
}

} #
*** PROGRAM ENDS
```