```
Model {
for (i in 1:4) {
 p[i] ~ dbeta(x[1],x[2]) # common beta for pr(1ary infertility)
 }
for (i in 5:7) {
 p[i] ~ dbeta(x[3],x[4]) # common beta for pr(2ndary infertility)
 }
for (i in 8:8) {
 p[i] ~ dbeta(.5,.5)     # Jeffreys priors p[8]
 }
f ~ dunif(0.89,1)        # adjustment for length of follow-up
for (i in 1:4) {
 x[i] ~ dexp(.001)       # priors for beta parameters
 }
for (i in 1:8) {
 r[i] ~ dbin(p[i],n[i])  # likelihood
 rhat[i] <- p[i] * n[i]  # expected value of the numerators
 dev[i] <- 2 * (r[i] * (log(r[i])-log(rhat[i])) + (n[i]-r[i]) *
           (log(n[i]- r[i]) - log(n[i]-rhat[i]))) # Deviance
# contribution
 }
x[5] <- x[1]/sum(x[1:2]) # estimate of pr(1ary infertility)
x[6] <- x[3]/sum(x[3:4]) # estimate of pr(2ndary infertility)
x[7] <- x[6] * f         # adjusted pr(2ndary)
x[8] <- x[5] + x[7]      # total infertility
x[9] <- x[8] * p[8]      #  total TFI
dev[9] <- sum(dev[1:8])  # total residual deviance
dev[10] <- sum(dev[1:7]) # totall res dev for fertility data
}
```

```
# Initial Values 1
list(x=c(4,6,4,6,NA,NA,NA,NA,NA),p=c(.4,.4,.4,.4,.4,.4,.4,.4),f=.92))
```

```
# Initial values 2
list(x=c(20,20,20,20,NA,NA,NA,NA,NA),p=c(.2,.2,.2,.2,.2,.2,.2,.2),
f=0.96))
```

```
# Data
# primary (Bhattacharya, Templeton, Gunnell, Oakley (adjusted))
# secondary ( Bhattacharya, Templeton, Gunnell)
# Proportion of total infertility (including males) due to TFI
# (Maheshwari)
list(r=c(79, 27, 31, 158.3, 5, 17, 41, 442),
n=c(2347, 766, 1609, 6128, 2347, 766, 1609, 1782))
```

Simulation model to adjust the Oakley % primary infertility data for the proportion of women who were involuntarily childless.

```
model {
for (i in 1:2) {
p[i] ~ dbeta(.5,.5)
```

```
r[i] ~ dbin(p[i],n[i]) }
p[3] <-  p[1]/p[2]
}

# Initial values
list(p=c(.5,.5,NA))

# Data
list(r=c(159,2910),n=c(6584,3113))
```

Results:

node	mean	sd	MC error	2.5%	median	97.5%	start	sample
p[1]	0.02422	0.001891	7.665E-6	0.02068	0.02418	0.02806	10001	60000
p[2]	0.9347	0.004425	1.77E-5	0.9257	0.9348	0.943	10001	60000
p[3]	0.02592	0.002027	8.251E-6	0.02211	0.02587	0.03004	10001	60000