Fit frailty model for bladder tumor recurrence data

```
alive.rec.cox.f=coxph(Surv(alive.rec[,2],alive.rec[,3],alive.rec[,4])~alive.rec[,5]+alive.rec
[,6]+alive.rec[,7]+frailty(alive.rec[,1]))
> alive.rec.cox.f
Call:
coxph(formula = Surv(alive.rec[, 2], alive.rec[, 3], alive.rec[,
    4]) ~ alive.rec[, 5] + alive.rec[, 6] + alive.rec[, 7] +
    frailty(alive.rec[, 1]))

                          coef  se(coef)      se2   Chisq DF     p
alive.rec[, 5]          0.2400    0.0833   0.0528    8.31  1 0.0040
alive.rec[, 6]         -0.0234    0.1046   0.0695    0.05  1 0.8200
alive.rec[, 7]         -0.5711    0.3043   0.2062    3.52  1 0.0610
frailty(alive.rec[, 1])                            77.46 42 0.0007

Iterations: 6 outer, 20 Newton-Raphson
     Variance of random effect= 0.868   I-likelihood = -504.8
Degrees of freedom for terms=  0.4  0.4  0.5 42.0
Likelihood ratio test=149  on 43.3 df, p=1.74e-13  n= 218
```

Fit frailty model for diabetic retinopathy data (clustered events data)

```
data = read.table("c:\\diab.txt",header=F)

a1 = as.matrix(data[,c(1,2,5,6,7,8)])
a2 = as.matrix(data[,c(3,4,5,6,7,9)])
a = rbind(a1,a2)
trt = c(rep(1,197),rep(0,197))
id = rep(1:197,2)
a = cbind(a,trt,id)

library(survival)
l = coxph(Surv(a[,1],a[,2])~a[,5]+a[,7]+frailty(a[,8]))

Call:
coxph(formula = Surv(a[, 1], a[, 2]) ~ a[, 5] + a[, 7] + frailty(a[,
    8]))

                 coef  se(coef)     se2   Chisq  DF   p
a[, 5]          0.041     0.221   0.166    0.03   1 8.5e-01
a[, 7]         -0.911     0.174   0.171   27.31   1 1.7e-07
frailty(a[, 8])                          113.79  84 1.7e-02
```

Iterations: 6 outer, 24 Newton-Raphson
    Variance of random effect= 0.851   I-likelihood = -850.8
Degrees of freedom for terms= 0.6 1.0 84.0
Likelihood ratio test=201 on 85.6 df, p=2.77e-11 n= 394

Fit marginal model for diabetic retinopathy data (clustered events data)

```
> l2 = coxph(Surv(a[,1],a[,2])~a[,5]+a[,7]+cluster(a[,8]))
>
> l2
Call:
coxph(formula = Surv(a[, 1], a[, 2]) ~ a[, 5] + a[, 7] + cluster(a[,
    8]))


           coef  exp(coef)  se(coef)  robust se      z       p
a[, 5]  0.0539      1.055     0.162      0.179  0.302  7.6e-01
a[, 7] -0.7789      0.459     0.169      0.149 -5.245  1.6e-07

Likelihood ratio test=22.5  on 2 df, p=1.31e-05  n= 394
```