

## Algorithms

### Restricted cubic splines

```
library(rms)
library(survminer)
library(ggplot2)
library(ggsci)
dd <- datadist(data)
options(datadist='dd')
fit<- cph(Surv(time, events) ~ rcs(NLR, 4),data=data)
cox.zph(fit, "rank")
ggcoxzph(cox.zph(fit, "rank"))
anova(fit)
HR<-Predict(fit,NLR,fun=exp,ref.zero = TRUE)
head(HR)
ggplot()+
  geom_line(data=HR,aes(NLR,yhat),
            linetype="solid",size=1,alpha=0.7,colour="#0070b9")+
  geom_ribbon(data=HR,
            aes(NLR,ymin=lower,ymax=upper),
            alpha=0.1,fill="#0070b9")+
  theme_classic()+
  geom_hline(yintercept = 1,linetype=2,size=1)+
  geom_vline(xintercept = 0.40,size=1,color='#d40e8c')+
  labs(title = "MACE Risk",x="NLR",y="Hazard ratio (95% CI)")
```

### Kaplan Meier curve

```
library(jskm)
library(survival)
fit <- survfit(Surv(time, events) ~ NLR level, data=data)
summary(fit)
jskm(fit, mark = F)
jskm(fit,mark =F,pval =T,table = T,label.nrisk = "No. at risk",
     size.label.nrisk = 8,xlabs = "time to events (years)", ylabs = "Survival free of
MACE (%)",
     ystrataname = "NLR level",ystratalabs = c("low NLR", "high NLR"),
     legendposition=c(0.85,0.9),timeby =1, ylims = c(0.6,1))
```