```
$PROBLEM IV INFUSION TWO COMPARTMENT SS
$INPUT ID TIME AMT DV RATE SS II MDV SEX AGE PCTQ PCTH ALT AST
ALB TBIL CR CRP WBC NP HGB PLT CRCL HT WT BMI CRRT ECMO
$DATA IMPN_TDM+ICU200208.csv IGNORE=@
$SUBROUTINES ADVAN3 TRANS4
$PK
TVCL = THETA(1)
TVV1    = THETA(2)
TVQ = THETA(3)
TVV2    = THETA(4)
NCRCL=CRCL
IF (CRCL.EQ.0) NCRCL=59.1
NWT=WT
IF (WT.EQ.0) NWT=65
CL = TVCL*(NCRCL/59.1)**(THETA(5))*(NWT/65)**(THETA(6))*(THETA(7))**ECMO*
EXP(ETA(1))
V1      = TVV1 * EXP(ETA(2))
Q     = TVQ * EXP(ETA(3))
V2      = TVV2    * EXP(ETA(4))
K = CL/V1
K12= Q/V1
K21= Q/V2
S1=V1
$ERROR
DEL=0
IF (F.LE.0.0001) DEL=1
IPRED=F
W1= 1
W2= F
IRES= DV-IPRED
IWRES=IRES/(W1+W2)
Y = F + W1*ERR(1) + W2*ERR(2)
$THETA
(0.2,7.63,20) ; 1 : [CL]
(8,18.7,50) ; 2 : [V1]
(0.2,3.98,10) ; 1 : [Q]
(1,9.96,50) ; 2 : [V2]
(0.1,0.243,1) ; 1 : CRCL ON [CL]
(0.1,0.865,1) ; 1 : WT ON [CL]
(0.1,1.3,10);ECMO ON CL
$OMEGA BLOCK(2)
0.1 ;IIV CL
0.01 ; IIV CL V1
0.1 ;IIV V1
$OMEGA
0 FIX ;IIV Q
0 FIX ;IIV V2
$SIGMA
0.015; [A] sigma(1,1)
0.093; [P] sigma(2,2)
$EST METHOD=1 INTER MAXEVAL=2000 NOABORT SIG=3 PRINT=1 MSFO=run0087.msf2
$COV
$TABLE ID TIME CL V1 Q V2 K K12 K21 ETA1 ETA2 ETA3 ETA4 ONEHEADER NOPRINT
FILE=patab0087
$TABLE AGE PCTQ PCTH ALT AST ALB TBIL CR WBC NP HGB PLT CRCL HT WT BMI ONEHEADER
NOPRINT FILE=cotab0087
$TABLE SEX CRRT ECMO ONEHEADER NOPRINT FILE=catab0087
$TABLE ID IPRED IWRES CWRES ONEHEADER NOPRINT FILE=sdtab0087
$TABLE ID CL V1 Q V2 K K12 K21 FIRSTONLY NOAPPEND NOPRINT FILE=0087.par
$TABLE ID ETA1 ETA2 ETA3 ETA4 FIRSTONLY NOAPPEND NOPRINT FILE=0087.eta
```

FIG S1 The control file of the final model.

TABLE S1 Simulated PTA with administered of 500mg (Q8h) of imipenem for 70 % *f*T > MIC at different levels of CRCL 20,40,70,100 ml/min and WT 50, 65, 80kg (10^{th}, 50^{th}, 90^{th})

MIC	**CRCL(ml/min)**				**WT(kg)**		
（μg/mL）	20	40	70	100	50	65	80
0.0625	100	100	100	99.9	100	100	100
0.125	100	100	99.7	99.5	100	99.9	99.7
0.25	99.8	99.7	99.1	97.9	99.5	99.0	99.0
0.5	99.5	98.2	94.2	89.1	97.5	95.9	94.3
1	97.0	89.1	78.5	69.9	86.3	82.4	76.9
2	82.6	65.6	45.1	35.2	62.2	52.3	44.7
4	47.4	27.4	14.9	9.8	25.4	18.5	14.3
8	12.5	5.1	1.4	0.7	4.2	2.0	1.2
16	0.9	0.1	0	0	0.3	0	0
32	0	0	0	0	0	0	0