

Bayesian Continual Reassessment Method Designs for Phase I Dose-Finding Trials

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A web application for phase I cancer study treatment designs

Sponsored by 1 P30 CA168524

This GUI references the [bcrm](#) package and was built using [Shiny](#).

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2017

Step 1 – Create data file

The data file will contain information on dose and toxicity from previously recruited patients.

	A	B	C	
1	patient	dose	tox	
2	1	1	0	
3	2	1	0	
4	3	1	0	
5	4	2	0	
6	5	2	0	
7	6	2	0	
8	7	3	1	
9	8	3	1	
10	9	3	1	
11				

1. The first row must have column titles of “patient”, “dose”, and “tox”
 - “patient” is a count of the number of subjects already recruited to the study
 - “dose” is a number corresponding to the actual dose. The lowest dose used in the study will be represented by a “1”, the next highest dose a “2”, and so on
 - “tox” is a binary variable: “0” represents a nontoxic reaction and a “1” represents a toxic reaction
2. Doses must be listed in cohorts of size 3
3. Save this file as a “.csv”

Step 2 – Upload file

Choose a .csv data file to upload for analysis
(.csv)

Browse... No file selected

1. Click the Browse button
2. Upload your .csv file

Step 3 – Dose Levels & Prior Probabilities of Toxicity

Enter the dose levels (seperated by commas)

5, 10, 15

1. Input the dose levels separated by commas

Enter the prior probabilities of toxicity corresponding to dose (seperated by commas)

0, 0.01 ,0.05

2. Input the prior probabilities of toxicity separated by commas.
*Make sure the probabilities of toxicity correspond to dose level

Step 4 –Posterior Distribution

The posterior distribution allows for different methods of calculating the probability of observing a toxic reaction conditional on the dose level.

Functional Form of Posterior Distribution

- Hyperbolic Tangent (1-Par)
- Logistic (1-Par)
- Power (1-Par) *SUGGESTED*
- Logisitic (2-Par)

1. Choose a model to use for the posterior distribution

*More information on the posterior distributions can be found in the [bcrm](#) package guide but we suggest using the Power model.

Step 5 – Prior Distribution

Choose a Prior Distribution

Gamma
 Uniform
 Lognormal
 Bivariate Lognormal

1. Choose a prior distribution

Enter value for first parameter:

Enter value for second parameter:

2. Enter values for each of the parameters of the chosen prior distribution

*If the user is unsure of what to enter, the default Gamma (1, 1) is suggested

Step 6 – Target Toxicity Rate

Choose the Target Toxicity Rate

0 0.3 1

0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

1. Choose a desired rate of toxicity (.30 corresponds to 30% chance of a toxic reaction)

Step 7 – Go!

Go!

1. Click “Go!” to run the analysis

Step 8 – Data Analysis

```
97.5% 0 0.7290 0.814  
  
Plug-in estimates of toxicity:  
5    10    15  
[1,] 0 0.298 0.455  
  
Next recommended dose: 10
```

Posterior p(DLT) quantiles: 2.5%, 25%, 50%, 75%, 97.5%
Diamond shows next recommended dose