

1

Covariate
determinationKnown clinical
covariate inputData driven covariate
determination

2

Select BI-specific
patient-treatments
(Gla-300 shown as example)

Basal insulin	Patient- treatments	Variables				Hypoglycemia rate
Gla-300	1	V1	V2	Vn		XX
Gla-300	2	V1	V2	Vn		XX
Gla-300	X	V1	V2	Vn		XX

BI-SPECIFIC COHORT

IDeg cohort

Gla-100 cohort

IDet cohort

Bootstrapping

BI-SPECIFIC PREDICTIVE MODEL DEVELOPMENT

4

Training data used to select a subset of
covariates that minimize prediction error
(LASSO REGRESSION)Training data set
(80%)

MODEL TRAINING

3

Random sampling with
replacement used to create
training data set and
test data set

5

Model training is an iterative
process, repeated until the
prediction is optimizedTest data set
(20%)PERFORMANCE
EVALUATION

6

Accuracy of predicted rates
versus actual rates is assessed
using the test data set

7

MEAN HYPOGLYCEMIA
RATE PREDICTIONS

Gla-300 model

Each BI-specific model is used to
predict hypoglycemia event rates
within the whole eligible patient
treatment cohort and the mean
rate with that model is calculate

8

GENERATING BI-SPECIFIC HYPOGLYCEMIA RATE
POINT-ESTIMATES AND CIsBootstrapping the modeling process
(repeating steps 3–7) results in a
large number of mean hypoglycemia
rates for each BI-specific model – this
allows the estimation of
hypoglycemia rate point-estimates
and 95% CIs for each BI

Bootstrapping

ALL ELIGIBLE PATIENT-TREATMENTS

Basal insulin	Patient- treatments	Variables				Hypoglycemia rate
Gla-300	1	V1	V2	Vn		XX
Gla-300	2	V1	V2	Vn		XX
Gla-300	X	V1	V2	Vn		XX
IDeg	1	V1	V2	Vn		XX
IDeg	2	V1	V2	Vn		XX
IDeg	X	V1	V2	Vn		XX
Gla-100	1	V1	V2	Vn		XX
Gla-100	2	V1	V2	Vn		XX
Gla-100	X	V1	V2	Vn		XX
IDet	1	V1	V2	Vn		XX
IDet	2	V1	V2	Vn		XX
IDet	X	V1	V2	Vn		XX

