

Are population pharmacokinetic and/or pharmacodynamic models adequately evaluated? A survey of the literature from 2002 to 2004.

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Data Abstraction Form for population PK/PD publications

MODEL EVALUATION

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ARTICLE	IDENTIFI	CATION
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DATE OF PUBLICATION (YEAR)
<i>TITLE</i>
FIRST AUTHOR

I. BASIC INTERNAL

For the PK, PD study or the PKPD study Were graphs plotted for basic evaluation?	Yes No
Were graphs plotted for basic evaluation?	Yes No
Which graphs are shown in the paper?	None
(OBS: Observations, PRED: Population Prediction, IPRED: Indivi-	ŕ
Weighted residuals of population, IWRES: Weighted residuals of i	•
Covariates, RES: Difference between PRED and OBS, η_i : interind	ividual random effects,
θ_i : individual parameters, "X": can be time or dose, Distribution:	boxplot, histogram, or QQ
plot)	
OBS vs X with PRED	
PRED vs "X"	RED vs "X"
☐ PRED vs OBS ☐ IPF	RED vs OBS
RES vs PRED	
☐ WRES vs "X" ☐ IW	RES vs "X"
☐ WRES vs PRED ☐ IW	RES vs IPRED
☐ WRES vs PRED ☐ IW	RES vs IPRED
☐ Distribution of RES or WRES ☐ Dis	stribution of η_i
\square Distribution of θ_i	
Others:	

Uncertainty on parameters
For the PK study
☐ SE or CV or CI on fixed effects
SE or CV or CI on variance of random effects
SE or CV or CI are obtained by:
Fisher information matrix
Profile likelihood
Bootstrap
Which type of bootstrap has been performed?
On individuals (wild bootstrap)
Other, define:
Number of bootstrap samples:
SD of posterior distribution of the parameters (Bayesian methods)
Graphs of posterior distribution of the parameters (Bayesian methods)
Correlation between estimates were reported
Others:
For the PD study (or PKPD study)
SE or CV or CI on fixed effects
SE or CV or CI on variance of random effects
SE or CV or CI are obtained by:
Fisher information matrix
Profile likelihood
Bootstrap
Which type of bootstrap has been performed?
On individuals (wild bootstrap)
Other, define:
Number of bootstrap samples:
SD of posterior distribution of the parameters (Bayesian methods)
Graphs of posterior distribution of the parameters (Bayesian methods)
Correlation between estimates were reported
Others:

Evaluation of covariate model
For the PK study
Were graphs plotted for evaluation of covariates model?
Which graphs are shown in the paper?
(WRES: Weighted residuals of population, IWRES: Weighted residuals of individual, COV:
Covariates, RES: Difference between PRED and OBS, η_i : interindividual random effects,
θ_i : individual parameters, θ : population parameters)
\square WRES vs COV $\qquad \qquad \square \ \eta_i \ vs \ COV$
\square RES vs COV \square θ _i vs COV
Other, define:
Randomisation test
Number of simulations:
Others, define:
For the PD study (or PKPD study)
Were graphs plotted for evaluation of covariates model? Yes No
Which graphs are shown in the paper?
(WRES: Weighted residuals of population, IWRES: Weighted residuals of individual, COV:
Covariates, RES: Difference between PRED and OBS, η_i : interindividual random effects, θ_i :
individual parameters)
\square WRES vs COV \square η_i vs COV
\square RES vs COV \square θ_i vs COV
Other, define:
Randomisation test
Number of simulations:
Others, define:

Model sensitivity
For the PK study
Sensitivity analysis to data outliers
Define method:
Sensitivity analysis to individual outliers
Define method:
Sensitivity analysis with respect to some parameters
Define method:
For the PD study (or PKPD study)
Sensitivity analysis to data outliers
Define method:
Sensitivity analysis to individual outliers
Define method:
Sensitivity analysis with respect to some parameters
Define method:

II. ADVANCED INTERNAL

Data splitting		
For the PK study		Yes No
Data (Validation dataset)		
Selection		Not reported
Within patient	Between patient	
Sequential		
Randomisation		
Stratification on covariates		
Covariate distribution compar	ed between validation	and building datasets
Number of subjects (PK):		Not reported
Number of observations (PK):		Not reported
Final Data		
Was the data reanalyzed by pooling building and v	ralidation datasets?	Yes No
		_
For the PD study (or PKPD study)		∐ Yes ∐ No
Data (Validation dataset)		
Selection		Not reported
Within patient	Between patient	
Sequential		
Randomisation		
Stratification on covariates		
Covariate distribution compar	ed between validation	and building datasets
Number of subjects (PK):		Not reported
Number of observations (PK):		Not reported
Final dataset		
Was the data reanalyzed by pooling building and v	alidation datasets?	Yes No

Monte Carlo simulation of datasets For the PK study	Yes No
Tor the TR study	163 110
Number of datasets	Not reported
Was design identical to original dataset?	Yes No No
If no, Number of subjects:	
Other differences, define:	
How simulations were performed?	Not reported
With uncertainty on population parameters?	Yes No
If yes:	
SE only	
Full covariance matrix	
Using bootstrap techniques	
Distribution for the population parameter:	
Multivariate normal or lognormal	
Full posterior	
Other, define:	
Which Software has been used?	
□ NONMEM □ SAS □ R/S □ TS2	Not reported
Other, define:	
Were simulated datasets fitted?	Yes No No
For the PD study (or PKPD study)	Yes No No
Number of datasets	Not reported
Was design identical to original dataset?	Yes No No
If no, Number of subjects:	
Other differences, define:	······

How simulations were performed?
With uncertainty on population parameters? Yes No
If yes:
SE only
Full covariance matrix
Using bootstrap techniques
Distribution for the population parameter:
Multivariate normal or lognormal
Full posterior
Other, define:
Which Software has been used ?
□ NONMEM □ SAS □ R/S □ TS2 □ Not reported
Other, define:
XX
Were simulated datasets fitted? Yes No No
Were simulated datasets fitted? Yes No No
Were simulated datasets fitted? Yes No No
Other methods Were simulated datasets fitted? Yes No
Other methods
Other methods For the PK study
Other methods For the PK study Denomination:
Other methods For the PK study Denomination: Purpose:
Other methods For the PK study Denomination: Purpose: Method steps:
Other methods For the PK study Denomination: Purpose: Method steps:
Other methods For the PK study Denomination: Purpose: Method steps: For the PD study
Other methods For the PK study Denomination: Purpose: Method steps: For the PD study Denomination:

Metrics		
For the PK study		
Prediction of validation dataset obtain	ined:	Not reported
with the model based on the but	ilding dataset withou	ut refitting
without covariate	with covari	ates
with the model based on the but	ilding dataset and re	fitting
without covariate	with covar	ates
without a model (Non Compart	mental Analysis, inc	lividual parameters)
Other, define:		
Metrics on observations (concentrati	ons)	
Types of metrics		☐ Not reported
	DEC)	Not reported
Prediction errors PE (residuals RES)		
		1' ' DMCE
Square prediction errors MSE o	or Root mean square	prediction errors RMSE
Square prediction errors MSE of Absolute prediction errors APE	or Root mean square	-
Square prediction errors MSE o	or Root mean square	-
Square prediction errors MSE of Absolute prediction errors APE	or Root mean square	uals WRES)
☐ Square prediction errors MSE of ☐ Absolute prediction errors APE ☐ Standardised prediction errors S	or Root mean square SPE (weighted residerations)	uals WRES) arlo simulations
☐ Square prediction errors MSE of ☐ Absolute prediction errors APE ☐ Standardised prediction errors S ☐ SPE where E(C) and SD(C) obt	or Root mean square SPE (weighted residerations)	uals WRES) arlo simulations
Square prediction errors MSE of Absolute prediction errors APE Standardised prediction errors SI SPE where E(C) and SD(C) obto Other metric:	SPE (weighted resideration of the content of the co	uals WRES) arlo simulations
Square prediction errors MSE of Absolute prediction errors APE Standardised prediction errors SI SPE where E(C) and SD(C) obto Other metric: Tests performed on metrics	SPE (weighted resideration of the content of the co	uals WRES) arlo simulations

On individual statistic o	or parameter		Not reporte
Estimated parameters	\square θ_i	$\prod \eta_i$	\square All i
	Other, de	efine:	
Statistic on	\square AUC _i	Clearance _i	
	Other, de	efine:	
Types of metrics			
Prediction errors	PE		
Square prediction	errors MSE or	Root mean square pred	diction errors RMS
Absolute prediction	on errors APE		
Standardised pred	liction errors SP	PE	
Other metric:			
Tests performed on metri	cs	Yes	☐ No
Define:	•••••		
Graphs		Yes	☐ No
Define ·			
Define:			
Define: On population statistic			Not reporte
		☐ Variability	
On population statistic	or parameter		
On population statistic	or parameter	☐ Variability	
On population statistic e Estimated parameters	or parameter	☐ Variability	
On population statistic e Estimated parameters	or parameter □ θ □ Other, de □ AUC □ mean	☐ Variability efine: ☐ Clearance	
On population statistic e Estimated parameters	or parameter □ θ □ Other, de □ AUC □ mean	☐ Variability efine:	
On population statistic of Estimated parameters Statistic on	or parameter □ θ □ Other, de □ AUC □ mean □ Other, de	☐ Variability efine:	
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors	or parameter □ θ □ Other, de □ AUC □ mean □ Other, de	☐ Variability efine:	☐ Not reporte
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors	or parameter	☐ Variability efine:	☐ Not reporte
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction	or parameter	☐ Variability efine:	☐ Not reporte
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction Standardised prediction	or parameter	☐ Variability efine:	☐ Not reported
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction Standardised prediction	or parameter □ θ □ Other, de □ AUC □ mean □ Other, de PE errors MSE or on errors APE liction errors SF	Variability efine: Clearance quartile efine: Root mean square prec	☐ Not reporte
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction Standardised pred Other metric: Tests performed on metri	or parameter □ θ □ Other, de □ AUC □ mean □ Other, de PE errors MSE or on errors APE liction errors SE	Variability efine: Clearance quartile efine: Root mean square prec	□ Not reported No
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction Standardised pred Other metric: Tests performed on metri	or parameter □ θ □ Other, de □ AUC □ mean □ Other, de PE errors MSE or on errors APE liction errors SE	☐ Variability efine: ☐ Clearance ☐ quartile efine: Root mean square prec	□ Not reported No
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction Standardised prediction Other metric: Tests performed on metric Define:	or parameter □ θ □ Other, de □ AUC □ mean □ Other, de PE errors MSE or on errors APE liction errors SP	☐ Variability efine: ☐ Clearance ☐ quartile efine: Root mean square prec	Not reported liction errors RMS.

or the PD study (or PKPD study)		
Prediction of validation dataset of	btained:	Not reported
with the model based on the	building dataset without	out refitting
without covariate	with covariates	
with the model based on the	building dataset and r	efitting
without covariate	with covariates	
without a model (Non Comp	oartmental Analysis, in	dividual parameters)
Other, define:		
Metrics on observations (effects)		
Types of metrics		Not reported
	~!~ DEC)	Not reported
Prediction errors PE (residue		
Square prediction errors MS	E or Root mean square	e prediction errors RMSE
Absolute prediction errors A	APE	
Standardised prediction erro	rs SPE (weighted resid	duals WRES)
\square SPE where E(C) and SD(C)	obtained with Monte	carlo simulations
Other metric:		
Tests performed on metrics	Yes	☐ No
Define:		
Graphs	Yes	☐ No
Define:		

On individual statistic o	r parameter		☐ Not reporte
Estimated parameters			\square All i
	Other, d	efine:	
Statistic on	AUC(ef	$(\text{fet})_i \Box \text{ EC50/ED50}$	i
	Other, d	efine:	
Types of metrics			
Prediction errors I	PE		
Square prediction	errors MSE or	Root mean square p	rediction errors RMS
Absolute prediction	on errors APE		
Standardised pred	iction errors S	PE	
Other metric :			
Tests performed on metric	cs	Yes	☐ No
Define:			
Graphs		Yes	☐ No
A 1 4 4 4 4			1 131 4
On population statistic of	or parameter		Not reporte
Estimated parameters	θ	☐ Variability	
Estimated parameters	□ θ □ Other, d	efine:	
	□ θ □ Other, d □ AUC(ef	efine:	
Estimated parameters	□ θ □ Other, d □ AUC(ef □ mean	efine: fet)	
Estimated parameters Statistic on	□ θ □ Other, d □ AUC(ef □ mean	efine:	
Estimated parameters Statistic on Types of metrics	□ θ □ Other, d □ AUC(ef □ mean □ Other, d	efine: fet)	
Estimated parameters Statistic on Types of metrics Prediction errors I	θ Other, d AUC(ef mean Other, d	efine:EC50/ED50	
Estimated parameters Statistic on Types of metrics Prediction errors I Square prediction	□ θ □ Other, d □ AUC(ef □ mean □ Other, d PE errors MSE or	efine:EC50/ED50	
Estimated parameters Statistic on Types of metrics Prediction errors I Square prediction Absolute prediction	□ θ □ Other, d □ AUC(ef □ mean □ Other, d PE errors MSE or on errors APE	efine:	
Estimated parameters Statistic on Types of metrics Prediction errors I Square prediction Absolute prediction Standardised pred	□ θ □ Other, d □ AUC(ef □ mean □ Other, d PE errors MSE or on errors APE iction errors SE	efine:	 rediction errors RMS
Estimated parameters Statistic on Types of metrics Prediction errors I Square prediction Absolute prediction Standardised pred Other metric:	□ θ □ Other, d □ AUC(ef □ mean □ Other, d PE errors MSE or on errors APE iction errors Si	efine:	rediction errors RMS
Estimated parameters Statistic on Types of metrics Prediction errors I Square prediction Absolute prediction Standardised pred Other metric: Tests performed on metric	□ θ □ Other, d □ AUC(ef □ mean □ Other, d PE errors MSE or on errors APE iction errors Si	efine:	rediction errors RMS
Estimated parameters Statistic on Types of metrics Prediction errors I Square prediction Absolute prediction Standardised pred Other metric: Tests performed on metric Define:	□ θ □ Other, d □ AUC(ef □ mean □ Other, d PE errors MSE or on errors APE iction errors Si	efine:	rediction errors RMS
Estimated parameters Statistic on Types of metrics Prediction errors I Square prediction Absolute prediction Standardised pred Other metric: Tests performed on metric Define:	□ θ □ Other, d □ AUC(ef □ mean □ Other, d PE errors MSE or on errors APE iction errors Si cs	efine:	rediction errors RMS

III. EXTERNAL

For the PK study				Not reported
Validation dataset (in co	omparison t	o building	g dataset)	
same inclusion criteria	Yes	☐ No		Not reported
if no, differences in :	Patholo	gy	Age	Ethnic group
	Other,	define:		
similar dose regimen	Yes	☐ No		Not reported
if no, differences in :	☐ Dose		Administration	on rhythm
similar sampling scheme	Yes	☐ No		Not reported
if no:	Richer		More sparse	
Number of subjects (PK)	:			Not reported
Number of observations ((PK):			Not reported
Covariates compared	between the	validation	n and building datas	sets
Final datasets				
Were the data reanalyzed b	y pooling bu	uilding and	d validation datasets	s ?
	yes	no		
For the PD study (or PKPD stud	<u>y)</u>			Not reported
Validation dataset (in co	omparison t	o building	g dataset)	
same inclusion criteria	Yes	☐ No		Not reported
if no, differences in :	Patholo	ogy	Age	Ethnic group
	Other,	define:		
similar dose regimen	Yes	☐ No		Not reported
if no, differences in :	☐ Dose		Administration	on rhythm
similar sampling scheme	Yes	☐ No		Not reported
if no:	Richer		More sparse	

Number of subjects (PK):	Not reported	
Number of observations (PK):	Not reported	
Covariates compared between the validation and building datasets		
Final datasets		
Were the data reanalyzed by pooling building and validation da	tasets?	
☐ yes ☐ no		
Monte Carlo simulation of datasets		
For the PK study	Yes No No	
Number of datasets	Not reported	
Was design identical to original dataset?	Yes No	
If no, Number of subjects:		
Other differences, define:		
How simulations were performed?	Not reported	
With uncertainty on population parameters?	Yes No No	
If yes:		
☐ SE only		
Full covariance matrix		
Using bootstrap techniques		
Distribution for the population parameter:		
☐ Multivariate normal or lognormal		
Full posterior		
Other, define:		
Which Software has been used?		
□ NONMEM □ SAS □ R/S □ TS2	Not reported	
Other, define:		
Were simulated datasets fitted?	Yes No	

For the PD study (or PKPD study) Yes No			
Number of datasets	Not reported		
Was design identical to original dataset?	Yes No No		
If no, Number of subjects:			
Other differences, define:			
How simulations were performed?	Not reported		
With uncertainty on population parameters? Yes No			
If yes:			
SE only			
Full covariance matrix			
Using bootstrap techniques			
Distribution for the population parameter:			
Multivariate normal or lognormal			
Full posterior			
Other, define:			
Which Software has been used?			
□ NONMEM □ SAS □ R/S □ TS2	☐ Not reported		
Other, define:	_		
Were simulated datasets fitted?	Yes No No		
Other methods			
For the PK study			
Denomination:			
Purpose:			
Method steps:			
For the PD study			
Denomination:			
Purpose:			
Method steps:			

Metrics		
For the PK study		
Prediction of validation dataset obtain	ined:	☐ Not reported
with the model based on the buil	lding dataset witho	out refitting
without covariate	with covariates	
with the model based on the buil	llding dataset and re	efitting
without covariate	with covariates	
without a model (Non Comparts	mental Analysis, in	dividual parameters)
Other, define:		
Metrics on observations (concentration	ons)	
Types of metrics		Not reported
Types of metrics Prediction errors PE (residuals)	RES)	Not reported
Prediction errors PE (residuals	r Root mean square	
Prediction errors PE (residuals Square prediction errors MSE o	r Root mean square	e prediction errors RMSE
☐ Prediction errors PE (residuals ☐ Square prediction errors MSE o ☐ Absolute prediction errors APE	r Root mean square	e prediction errors RMSE
☐ Prediction errors PE (residuals ☐ Square prediction errors MSE o ☐ Absolute prediction errors APE ☐ Standardised prediction errors S	r Root mean square SPE (weighted resident ained with Monte contents)	e prediction errors RMSE
Prediction errors PE (residuals) Square prediction errors MSE of Absolute prediction errors APE Standardised prediction errors Standardised prediction er	r Root mean square SPE (weighted resident ained with Monte contents)	e prediction errors RMSE
Prediction errors PE (residuals Square prediction errors MSE o Absolute prediction errors APE Standardised prediction errors S SPE where E(C) and SD(C) obt Other metric:	r Root mean square SPE (weighted resident ained with Monte of Yes	e prediction errors RMSE duals WRES) earlo simulations
Prediction errors PE (residuals and Square prediction errors MSE of Absolute prediction errors APE Standardised prediction errors Square Square prediction errors Square Square prediction errors Square Square prediction errors Square	r Root mean square SPE (weighted resident ained with Monte of Yes	e prediction errors RMSE duals WRES) earlo simulations

On individual statistic o	or parameter		∐ Not repor
Estimated parameters			\square All $_i$
	Other, de	efine:	
Statistic on	\square AUC _i	Clearance _i	
	Other, de	efine:	
Types of metrics			
Prediction errors	PE		
Square prediction	errors MSE or	Root mean square pr	rediction errors RM
Absolute prediction	on errors APE		
Standardised pred	liction errors SP	E	
Other metric:			
Tests performed on metri	cs	Yes	☐ No
Define:			
Graphs		Yes	☐ No
Define:			
Define: On population statistic of Estimated parameters		☐ Variability	
On population statistic	or parameter		☐ Not repor
On population statistic	or parameter	☐ Variability efine: ☐ Clearance	Not repor
On population statistic of Estimated parameters	or parameter □ θ □ Other, de □ AUC □ mean	☐ Variability efine: ☐ Clearance ☐ quartile	☐ Not repor
On population statistic of Estimated parameters Statistic on	or parameter □ θ □ Other, de □ AUC □ mean	☐ Variability efine: ☐ Clearance	☐ Not repor
On population statistic of Estimated parameters Statistic on Types of metrics	or parameter □ θ □ Other, de □ AUC □ mean □ Other, de	☐ Variability efine: ☐ Clearance ☐ quartile	☐ Not repor
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors	or parameter □ θ □ Other, de □ AUC □ mean □ Other, de	☐ Variability efine:	□ Not repor
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction	or parameter	☐ Variability efine: ☐ Clearance ☐ quartile	☐ Not repor
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction	or parameter	☐ Variability efine:	☐ Not repor
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction Standardised prediction	or parameter	☐ Variability efine:	□ Not repor
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction Standardised pred Other metric:	or parameter	Variability efine: Clearance quartile efine: Root mean square process	Not repor
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction Standardised pred Other metric: Tests performed on metri	or parameter □ θ □ Other, de □ AUC □ mean □ Other, de PE errors MSE or on errors APE liction errors SP	☐ Variability efine: ☐ Clearance ☐ quartile efine: Root mean square property	□ Not repor
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction Standardised pred Other metric: Tests performed on metric Define:	or parameter □ θ □ Other, de □ AUC □ mean □ Other, de PE errors MSE or on errors APE liction errors SP	☐ Variability efine: ☐ Clearance ☐ quartile efine: Root mean square property	Not repor
On population statistic of Estimated parameters Statistic on Types of metrics Prediction errors Square prediction Absolute prediction Standardised pred Other metric: Tests performed on metric Define:	or parameter	☐ Variability efine: ☐ Clearance ☐ quartile efine: Root mean square property	Not repor

or the PD study (or PKPD study)		
Prediction of validation dataset obta	ained:	Not reported
with the model based on the bu	uilding dataset witho	out refitting
without covariate	with covariates	
with the model based on the bu	uilding dataset and re	efitting
without covariate	with covariates	
without a model (Non Compar	tmental Analysis, in	dividual parameters)
Other, define:		
Metrics on observations (effects)		
Types of metrics		□ Not reported
Types of metrics Prediction errors PE (residuals	s RES)	Not reported
Prediction errors PE (residuals	,	
Prediction errors PE (residuals Square prediction errors MSE	or Root mean square	
Prediction errors PE (residuals Square prediction errors MSE Absolute prediction errors API	or Root mean square	e prediction errors RMSE
Prediction errors PE (residuals Square prediction errors MSE Absolute prediction errors API Standardised prediction errors	or Root mean square E SPE (weighted resid	e prediction errors RMSE
Prediction errors PE (residuals Square prediction errors MSE Absolute prediction errors API Standardised prediction errors SPE where E(C) and SD(C) of	or Root mean square E SPE (weighted resident to the square)	e prediction errors RMSE duals WRES) earlo simulations
Prediction errors PE (residuals Square prediction errors MSE Absolute prediction errors API Standardised prediction errors SPE where E(C) and SD(C) of Other metric:	or Root mean square E SPE (weighted resident to the square)	e prediction errors RMSE duals WRES) earlo simulations
Prediction errors PE (residuals Square prediction errors MSE Absolute prediction errors API Standardised prediction errors SPE where E(C) and SD(C) of Other metric: Tests performed on metrics	or Root mean square E SPE (weighted resident to tained with Monte of the Yes)	e prediction errors RMSE duals WRES) earlo simulations
Prediction errors PE (residuals Square prediction errors MSE Absolute prediction errors API Standardised prediction errors SPE where E(C) and SD(C) of Other metric:	or Root mean square E SPE (weighted resident to tained with Monte of the Yes)	e prediction errors RMSE duals WRES) earlo simulations

On individual statistic or paran	neter	Not reported	
Estimated parameters		$\prod \eta_i$ lefine:	☐ All i
Statistic on	AUC(et	ffet) _i EC50/ED50 _i	
	Other, o	lefine:	
Types of metrics			
Prediction errors P	E		
Square prediction	errors MSE o	r Root mean square pro	ediction errors RMSE
Absolute predictio	n errors APE		
Standardised predi	ction errors S	PE	
Other metric:			
Tests performed on metric	S	Yes	No
Define :			
Graphs		Yes	☐ No
Define :			
On population statistic o	r parameter	_	Not reported
Estimated parameters	θ	Variability	
		lefine:	
Statistic on		ffet) EC50/ED50	
Statistic on	mean	quartile	
	mean		
Types of metrics	mean Other, o	quartile	
Types of metrics Prediction errors P	mean Other, o	quartile quartile	
Types of metrics Prediction errors P Square prediction	mean Other, of	quartile	
Types of metrics Prediction errors P Square prediction Absolute prediction	mean Other, of E errors MSE of n errors APE	quartile define: r Root mean square pro	
Types of metrics Prediction errors P Square prediction Absolute prediction Standardised prediction	mean Other, of E errors MSE of n errors APE ction errors S	quartile define: r Root mean square pro	ediction errors RMSE
Types of metrics Prediction errors P Square prediction Absolute predictio Standardised prediction Other metric:	mean Other, of E errors MSE of n errors APE ction errors S	quartile lefine: r Root mean square pro	ediction errors RMSE
Types of metrics Prediction errors P Square prediction Absolute predictio Standardised prediction Other metric: Tests performed on metric	mean Other, of E errors MSE of n errors APE ction errors S	quartile lefine: r Root mean square pro	ediction errors RMSE
Types of metrics Prediction errors P Square prediction Absolute prediction Standardised prediction Other metric: Tests performed on metric	mean Other, of E errors MSE of n errors APE ction errors S	quartile define: r Root mean square pro	ediction errors RMSE
Types of metrics Prediction errors P Square prediction Absolute prediction Standardised prediction Other metric: Tests performed on metric Define:	mean Other, of TE errors MSE of n errors APE ction errors S	quartile lefine: r Root mean square pro	ediction errors RMSE

		\$	SUBJECTIVE SYNTHESIS
Was there	an attem	pt to evaluat	te the model?
☐ No	Poor	Good	Excellent
Was the ch	noice of th	e metrics ap	ppropriate?
☐ No	Poor	Good	Excellent
Was the m	odel evalı	uated?	
☐ No	Poor	Good	Excellent