



Clinical trial results:

Pharmacokinetics study of piperacillin-tazobactam and meropenem in obese patients

Summary

EudraCT number	2013-000652-18
Trial protocol	BE
Global end of trial date	07 February 2018

Results information

Result version number	v1 (current)
This version publication date	10 August 2025
First version publication date	10 August 2025

Trial information

Trial identification

Sponsor protocol code	E2013PK-OB-PTZ-MEM
-----------------------	--------------------

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	-
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	HUB-Hôpital Erasme
Sponsor organisation address	Route de Lennik 808 , Brussels, Belgium,
Public contact	Dr M. Hites, HUB-Hôpital Erasme, 0032 25555779, maya.hites@hubruxelles.be
Scientific contact	Dr M. Hites, HUB-Hôpital Erasme, 0032 25555779, maya.hites@hubruxelles.be

Notes:

Paediatric regulatory details

Is trial part of an agreed paediatric investigation plan (PIP)	No
Does article 45 of REGULATION (EC) No 1901/2006 apply to this trial?	No
Does article 46 of REGULATION (EC) No 1901/2006 apply to this trial?	No

Notes:

Results analysis stage

Analysis stage	Final
Date of interim/final analysis	07 February 2018
Is this the analysis of the primary completion data?	Yes
Primary completion date	23 August 2015
Global end of trial reached?	Yes
Global end of trial date	07 February 2018
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

Determine the pharmacokinetics parameters of broad spectrum B-lactams (piperacillin-tazobactam and meropenem) given conventional doses in obese patients.

Protection of trial subjects:

Patients managed per standard of care procedure

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	11 March 2013
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	No

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	Belgium: 71
Worldwide total number of subjects	71
EEA total number of subjects	71

Notes:

Subjects enrolled per age group

In utero	0
Preterm newborn - gestational age < 37 wk	0
Newborns (0-27 days)	0
Infants and toddlers (28 days-23 months)	0
Children (2-11 years)	0
Adolescents (12-17 years)	0
Adults (18-64 years)	51
From 65 to 84 years	19
85 years and over	1

Subject disposition

Recruitment

Recruitment details:

Recruitment in Belgium

Pre-assignment

Screening details:

Obese patients (BMI ≥ 30 kg/m²) hospitalized and receiving TZP or MEM intravenously for a suspected or confirmed infection

Pre-assignment period milestones

Number of subjects started	71
Number of subjects completed	71

Period 1

Period 1 title	Overall Trial (overall period)
Is this the baseline period?	Yes
Allocation method	Non-randomised - controlled
Blinding used	Not blinded

Arms

Are arms mutually exclusive?	Yes
------------------------------	-----

Arm title	Piperacillin-tazobactam (TZP)
------------------	-------------------------------

Arm description: -

Arm type	Active comparator
Investigational medicinal product name	Piperacillin-tazobactam (TZP)
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Powder for solution for infusion
Routes of administration	Intravenous use

Dosage and administration details:

Dose administered: 4 g of piperacillin / 500 mg of tazobactam per dose.

Frequency of administration: Four times daily (QID), every 6 hours

Arm title	Meropenem (MEM)
------------------	-----------------

Arm description: -

Arm type	Active comparator
Investigational medicinal product name	Meropenem (MEM)
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Powder for concentrate for solution for injection/infusion
Routes of administration	Intravenous use

Dosage and administration details:

Dose administered: 1 g (1000 mg) per dose.

Frequency of administration: Three times daily (TID), every 8 hours.

Number of subjects in period 1	Piperacillin- tazobactam (TZP)	Meropenem (MEM)
Started	40	31
Completed	40	31

Baseline characteristics

Reporting groups

Reporting group title	Overall Trial
-----------------------	---------------

Reporting group description: -

Reporting group values	Overall Trial	Total	
Number of subjects	71	71	
Age categorical			
Units: Subjects			
Adults (18-64 years)	51	51	
From 65-84 years	19	19	
85 years and over	1	1	
Age continuous			
Units: years			
median	50		
full range (min-max)	18 to 87	-	
Gender categorical			
Units: Subjects			
Female	33	33	
Male	38	38	

End points

End points reporting groups

Reporting group title	Piperacillin-tazobactam (TZP)
Reporting group description: -	
Reporting group title	Meropenem (MEM)
Reporting group description: -	

Primary: AUC unbound concentration of Piperacillin-Tazobactam and Meropenem

End point title	AUC unbound concentration of Piperacillin-Tazobactam and Meropenem
End point description:	
End point type	Primary
End point timeframe:	
End of trial	

End point values	Piperacillin-tazobactam (TZP)	Meropenem (MEM)		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	40	31		
Units: mg.h/L				
arithmetic mean (full range (min-max))				
Obese (BMI ≥ 30 kg/m ²)	200 (144 to 256)	61.53 (33.73 to 89.33)		
Non-obese (BMI < 30 kg/m ²)	291 (166 to 416)	73.52 (46.87 to 100.17)		

Statistical analyses

Statistical analysis title	Pharmacokinetic Analysis of TZP
Statistical analysis description:	
Comparative Analysis of Pharmacokinetic Parameters Between Obese and Non-Obese Patients for Piperacillin-Tazobactam.	
This pharmacokinetic study included 40 adults (obese and non-obese) receiving piperacillin-tazobactam (4 g/500 mg IV QID). Nine blood samples were collected to assess pharmacokinetics (AUC, clearance, volume of distribution, % time fTZP >16 mg/L & 64 mg/L). Creatinine clearance was measured. Groups were compared using statistical tests ($p < 0.05$).	
Comparison groups	Piperacillin-tazobactam (TZP) v Meropenem (MEM)

Number of subjects included in analysis	71
Analysis specification	Pre-specified
Analysis type	other ^[1]
P-value	= 0.01 ^[2]
Method	t-test, 2-sided

Notes:

[1] - Comparative statistical analysis of pharmacokinetic (PK) parameters (e.g., volume of distribution, clearance, and AUC) between obese and non-obese patients to determine differences in drug exposure.

[2] - P-values represent statistical comparisons between obese and non-obese patients for pharmacokinetic parameters:

Volume of Distribution: p = 0.010

Clearance: p = 0.007

AUC: p = 0.010

% Time fTZP > 64 mg/L: p = 0.005

Statistical analysis title	Pharmacokinetic Analysis of Meropenem
Comparison groups	Meropenem (MEM) v Piperacillin-tazobactam (TZP)
Number of subjects included in analysis	71
Analysis specification	Pre-specified
Analysis type	other ^[3]
P-value	= 0.122 ^[4]
Method	t-test, 2-sided

Notes:

[3] - Comparative analysis of pharmacokinetic (PK) parameters, including volume of distribution, clearance, and % time unbound MEM > 2 mg/L, between obese and non-obese patients.

This pharmacokinetic study included 31 adults (obese and non-obese) receiving meropenem (1 g IV TID). Eleven blood samples were collected to assess pharmacokinetics (AUC, clearance, volume of distribution, % time fMEM >2 mg/L). Creatinine clearance was measured. Groups were compared using statistical tests (p < 0.05).

[4] - P-values represent statistical comparisons between obese and non-obese patients for pharmacokinetic parameters.

Adverse events

Adverse events information^[1]

Timeframe for reporting adverse events:

March 2013 - Dec 2018

Adverse event reporting additional description:

Adverse events were actively monitored throughout the study. However, no adverse events were reported by patients, either serious or non-serious. The patients study duration was only 24h.

Assessment type	Systematic
-----------------	------------

Dictionary used

Dictionary name	MedDRA
-----------------	--------

Dictionary version	23
--------------------	----

Frequency threshold for reporting non-serious adverse events: 0 %

Notes:

[1] - There are no non-serious adverse events recorded for these results. It is expected that there will be at least one non-serious adverse event reported.

Justification: There are no non-serious adverse events recorded for these results. It is expected that there will be a low incidence of adverse events due to the study's focus on pharmacokinetic evaluations in non-critically ill patients. All data related to adverse events, if any, will be monitored and documented throughout the study.

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? No

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

None reported