



Clinical trial results:

A phase IV, prospective, randomised single-blind UK multicentre non-inferiority trial of low-dose versus standard dose rituximab for prevention of relapses in acquired TTP

Summary

EudraCT number	2017-001117-86
Trial protocol	GB
Global end of trial date	31 January 2025

Results information

Result version number	v1 (current)
This version publication date	10 April 2026
First version publication date	10 April 2026
Summary attachment (see zip file)	ERTTP final stats report v1.4 (ERTTP final stats report v1.4 confidential.pdf)

Trial information

Trial identification

Sponsor protocol code	16/0340
-----------------------	---------

Additional study identifiers

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

Notes:

Sponsors

Sponsor organisation name	University College London
Sponsor organisation address	Gower Street, London, United Kingdom,
Public contact	Joint Research Office, University College London, ctimps@ucl.ac.uk
Scientific contact	Joint Research Office, University College London, ctimps@ucl.ac.uk

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	18 February 2026
Is this the analysis of the primary completion data?	No
Global end of trial reached?	Yes
Global end of trial date	31 January 2025
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

We know that a fall in ADAMTS13 activity in remission can be a sign of upcoming TTP relapse. We plan to see if low dose rituximab is as effective as the standard dose in preventing TTP relapse by looking at the length of time until patients need to be treated again with rituximab or other immunosuppression

Protection of trial subjects:

Annual data monitoring and safety committee

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	03 July 2017
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	Yes

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	United Kingdom: 70
Worldwide total number of subjects	70
EEA total number of subjects	0

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)	59
From 65 to 84 years	11
85 years and over	0

Subject disposition

Recruitment

Recruitment details:

70 patients randomised , 35 in each study arm

Pre-assignment

Screening details:

163 patients potentially eligible

Period 1

Period 1 title	Overall trial (overall period)
Is this the baseline period?	Yes
Allocation method	Randomised - controlled
Blinding used	Single blind
Roles blinded	Subject

Arms

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

Arm title	Standard dose rituximab
------------------	-------------------------

Arm description:

375mg/m2 x4 doses weekly

Arm type	Active comparator
Investigational medicinal product name	Rituximab
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Solution for infusion
Routes of administration	Intravenous use

Dosage and administration details:

375mg/m2 iv weekly for 4 weeks

Arm title	Low dose rituximab
------------------	--------------------

Arm description:

RTX 200mg iv weekly x 4

Arm type	Experimental
Investigational medicinal product name	Rituximab
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Solution for infusion
Routes of administration	Intravenous use

Dosage and administration details:

200mg flat dose iv weekly for 4 weeks

Number of subjects in period 1	Standard dose rituximab	Low dose rituximab
Started	35	35
Completed	28	24
Not completed	7	11
sponsor decision	-	1
Physician decision	3	1
clinical relapse (2 during treatment period)	-	4
death	1	1
Adverse event, non-fatal	-	3
.	2	-
Lost to follow-up	1	-
Protocol deviation	-	1

Baseline characteristics

Reporting groups

Reporting group title	Standard dose rituximab
Reporting group description: 375mg/m ² x4 doses weekly	
Reporting group title	Low dose rituximab
Reporting group description: RTX 200mg iv weekly x 4	

Reporting group values	Standard dose rituximab	Low dose rituximab	Total
Number of subjects	35	35	70
Age categorical Units: Subjects			
In utero			0
Preterm newborn infants (gestational age < 37 wks)			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)			0
From 65-84 years			0
85 years and over			0
Age continuous Units: years			
arithmetic mean	51.0	49.7	
standard deviation	± 14.3	± 15.4	-
Gender categorical Units: Subjects			
Female	25	25	50
Male	10	10	20

End points

End points reporting groups

Reporting group title	Standard dose rituximab
Reporting group description: 375mg/m ² x4 doses weekly	
Reporting group title	Low dose rituximab
Reporting group description: RTX 200mg iv weekly x 4	

Primary: Time to retreatment (days) with rituximab or other immunosuppression

End point title	Time to retreatment (days) with rituximab or other immunosuppression
End point description:	
End point type	Primary
End point timeframe: From Day 1 of first rituximab infusion to D1 of any subsequent course of elective rituximab	

End point values	Standard dose rituximab	Low dose rituximab		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	31	28		
Units: Hazard ratio				
median (confidence interval 90%)	20.1 (17.2 to 24.4)	19.7 (15.5 to 27.2)		

Statistical analyses

Statistical analysis title	Primary outcome
Statistical analysis description: primary outcome is time to retreatment with rituximab/other immunosuppression measured in days from day of first rituximab infusion (D1) until D1 of any subsequent course of elective rituximab, or introduction of other immunosuppression initiated with the aim of preventing clinical relapse of TTP after having achieved normalisation of ADAMTS13 or return to patient's normal baseline. This is analysed as a time-to-event variable.	
Comparison groups	Low dose rituximab v Standard dose rituximab
Number of subjects included in analysis	59
Analysis specification	Pre-specified
Analysis type	non-inferiority
P-value	= 0.799
Method	Logrank
Parameter estimate	Hazard ratio (HR)
Point estimate	0.93

Confidence interval	
level	90 %
sides	2-sided
lower limit	0.56
upper limit	1.53

Adverse events

Adverse events information^[1]

Timeframe for reporting adverse events:

AEs collected from the time of signing of the informed consent and throughout the study period including the follow-up period.

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

Dictionary used

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

Dictionary version	24.0
--------------------	------

Reporting groups

Reporting group title	Whole trial
-----------------------	-------------

Reporting group description: -

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: All AEs reported and listed in supplementary information of publication

Infusion-related adverse effects or other rituximab-related adverse effects reported as pre-specified secondary outcomes

Serious adverse events	Whole trial		
Total subjects affected by serious adverse events			
subjects affected / exposed	14 / 70 (20.00%)		
number of deaths (all causes)	2		
number of deaths resulting from adverse events	2		
Vascular disorders			
Pulmonary embolism			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Cardiac disorders			
Acute myocardial infarction			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Arteriosclerosis coronary artery			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 1		
Chest pain			

subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Coronary artery thrombosis			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 1		
Nervous system disorders			
Ischaemic stroke			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Blood and lymphatic system disorders			
Sickle cell anaemia with crisis			
subjects affected / exposed	2 / 70 (2.86%)		
occurrences causally related to treatment / all	0 / 3		
deaths causally related to treatment / all	0 / 0		
Immune system disorders			
Serum sickness			
subjects affected / exposed	4 / 70 (5.71%)		
occurrences causally related to treatment / all	4 / 4		
deaths causally related to treatment / all	0 / 0		
Autoimmune haemolytic anaemia			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Respiratory, thoracic and mediastinal disorders			
Dyspnoea			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Infections and infestations			
Cellulitis			

subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 2		
deaths causally related to treatment / all	0 / 0		
COVID-19			
subjects affected / exposed	2 / 70 (2.86%)		
occurrences causally related to treatment / all	1 / 2		
deaths causally related to treatment / all	0 / 1		
Febrile infection			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Influenza			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Lower Respiratory Tract infection			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Upper respiratory tract Infection			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	1 / 1		
deaths causally related to treatment / all	0 / 0		
Urinary Tract Infection			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Viral infection			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Metabolism and nutrition disorders			
Hyperkalaemia			

subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		
Hyponatraemia			
subjects affected / exposed	1 / 70 (1.43%)		
occurrences causally related to treatment / all	0 / 1		
deaths causally related to treatment / all	0 / 0		

Frequency threshold for reporting non-serious adverse events: 5 %

Non-serious adverse events	Whole trial		
Total subjects affected by non-serious adverse events			
subjects affected / exposed	0 / 70 (0.00%)		

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
15 May 2018	Protocol version 1.2 Substantial amendments including addition of sites, change of PIs, change of conduct of trial
15 April 2020	Protocol version 1.4 Substantial amendments: 1) Change of inclusion criteria to include patients with platelets at usual baseline where another cause of thrombocytopenia exists AND platelets 100-150) 2) Sub-investigators update 3) Protocol versions 4) Updated version of SAE reporting flowchart 5) Timing of randomisation 6) Individual sites can randomise 7) The same blood tests may be used for screening and D1 visit if they occur on the same day 8) ADAMTS13 activity result performed within 7 days before randomisation may be used for screening (standard of care ADAMTS13 result from up to 7 days before screening visit may be used) 9) Virology (HIV, hepatitis B, hepatitis C) results performed within 7 days before randomisation may be used for screening (standard of care results from up to 7 days before screening visit may be used) 10) CD19 count, immunoglobulins, ADAMTS13 activity/antibodies removed from D1 bloods 11) No requirement for temperature checks at follow up visit 12) Urea removed from trial biochemistry 13) Clarification of the procedure for when an existing participant is re-randomised into the study. 14) Clarification of vital signs to be taken on visits 3,4&5 15) Update on information required to be included on patient samples. 16) Administrative updates to email addresses etc. 17) Minor changes/ clarifications to statistical plan
03 June 2021	Protocol version 1.5 Substantial amendments: 1. Administrative updates and changes to contact details. 2. Increase recruitment target to 64 to account for withdrawals/loss to follow up (e.g. due to pregnancy, death etc.) and updated Figures 2 & 3 to reflect this 3. Clarification of the evaluable/analysis population 4. Increase recruitment period from 36 months to 51 months and total trial duration from 60 months to 75 months and updated Figure 1 to reflect this 5. Clarification of primary and secondary outcomes with more precise wording. 6. Guidance on the timing of COVID vaccination in relation to rituximab administration

Notes:

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

None reported