Clinical trial results:
Simplification from Tenofovir plus Lamivudine or Emtricitabine plus Ritonavir-Boosted-Protease Inhibitor to Ritonavir-Boosted-Atazanavir plus Lamivudine in Virologically-Suppressed-HIV-Infected Adults with Osteopenia: a pilot study

Summary

EudraCT number	2014-002720-27
Trial protocol	ES
Global end of trial date	30 November 2018

Results information

Result version number	v1 (current)
This version publication date	09 August 2025
First version publication date	09 August 2025

Trial information

Trial identification

Sponsor protocol code	2014-002720-27

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT02652793
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	Fundació Clinic per a la Recerca Biomèdica
Sponsor organisation address	Villarroel 170, Barcelona, Spain, 08036
Public contact	Judit Pich, CTU Clinic (Clinical Trial Unit), 34 932275400,
Scientific contact	Judit Pich, CTU Clinic (Clinical Trial Unit), 34 932275400,

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	30 November 2018
Is this the analysis of the primary completion data?	Yes
Primary completion date	30 November 2018
Global end of trial reached?	Yes
Global end of trial date	30 November 2018
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

To assess the change in BMD by dual-energy X-ray (DXA) absorptiometry in HIV-infected adults with hip or spine T-score < -1.0 by DXA at week 48 after switching to r/ATV plus lamivudine.

Protection of trial subjects:

All participants provided written informed consent prior to any study-related procedures. The study was conducted in accordance with the Declaration of Helsinki and ICH-GCP guidelines. Safety assessments—including physical examinations, laboratory tests, and monitoring of adverse events—were performed regularly throughout the study. Blood and urine samples were collected following local laboratory standards to minimize discomfort. For women of childbearing potential, pregnancy tests were conducted to ensure safety. Any adverse events were closely monitored and managed according to clinical judgment, with procedures in place for prompt reporting and follow-up.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	25 November 2014
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	Spain: 31
Worldwide total number of subjects	31
EEA total number of subjects	31

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)	31
From 65 to 84 years	0

85 years and over	0

Subject disposition

Recruitment

Recruitment details: -

Pre-assignment

Screening details:

A total of 60 individuals were screened between Nov 2015 and Nov 2017 at Hospital Clínic, Barcelona. 29 were excluded due to normal BMD, prior virological failure, hypogonadism, or contraindicated medications. 31 participants were enrolled and assigned to treatment.

Period 1

Period 1 title	Informed Consent Period
Is this the baseline period?	No
Allocation method	Not applicable
Blinding used	Not blinded

Arms

Arm title	RTV-boosted ATV + 3TC

Arm description:

Participants received ritonavir-boosted atazanavir (300/100 mg) plus lamivudine (300 mg) once daily for 48 weeks.

Arm type	Single group
Investigational medicinal product name	Boosted atazanavir
Investigational medicinal product code	
Other name	Atazanavir 300 mg + Ritonavir 100 mg
Pharmaceutical forms	Capsule
Routes of administration	Oral use

Dosage and administration details:

Atanazir 300 mg once dailly boosted with 100 mg of ritonavir once dailly

Investigational medicinal product name	Lamivudine
Investigational medicinal product code	
Other name	3TC
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

300 mg once daily

Number of subjects in period 1	RTV-boosted ATV + 3TC
Started	31
Completed	30
Not completed	1
Consent withdrawn by subject	1

Period 2

Period 2 title	Baseline Analysis Period
Is this the baseline period?	Yes[1]
Allocation method	Not applicable
Blinding used	Not blinded

Arms

Arm title	RTV-boosted ATV + 3TC

Arm description:

Participants received ritonavir-boosted atazanavir (300/100 mg) plus lamivudine (300 mg) once daily for 48 weeks.

Arm type	Single group
Investigational medicinal product name	Boosted atazanavir
Investigational medicinal product code	
Other name	Atazanavir 300 mg + Ritonavir 100 mg
Pharmaceutical forms	Capsule
Routes of administration	Oral use

Dosage and administration details:

Atanazir 300 mg once dailly boosted with 100 mg of ritonavir once dailly

Investigational medicinal product name	Lamivudine
Investigational medicinal product code	
Other name	3TC
Pharmaceutical forms	Tablet
Routes of administration	Oral use

Dosage and administration details:

300 mg once daily

Notes:

[1] - Period 1 is not the baseline period. It is expected that period 1 will be the baseline period.

Justification: The first period ("Informed Consent Period") includes all 31 participants who signed informed consent. However, one participant did not initiate treatment and was excluded from all baseline and outcome analyses. Therefore, the "Baseline Analysis Period" includes only the 30 participants who started treatment and for whom baseline data were collected.

Number of subjects in period 2[2]	RTV-boosted ATV + 3TC
Started	30
Completed	27
Not completed	3
Adverse event, non-fatal	1
Lost to follow-up	2

Notes:

[2] - The number of subjects reported to be in the baseline period are not the same as the worldwide number enrolled in the trial. It is expected that these numbers will be the same.

Justification: Although 31 participants signed the informed consent and were enrolled, one participant did not initiate treatment after screening and was therefore excluded from all baseline and outcome analyses. As a result, baseline characteristics are reported for 30 participants only.

Baseline characteristics

Reporting groups

Reporting group title	Baseline Analysis Period

Reporting group description: -

Reporting group values	Baseline Analysis Period	Total	
Number of subjects	30	30	
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			
Age of participants at baseline. Although the analysis was conducted on 30 subjects, the total number of enrolled participants was 31.			
Units: years			
median	40		
inter-quartile range (Q1-Q3)	33 to 47	-	
Gender categorical			
Gender distribution of participants at baseline. One participant did not initiate treatment but is included in the total enrolled.			
Units: Subjects			
Female	4	4	
Male	26	26	

End points

End points reporting groups

Reporting group title	RTV-boosted ATV + 3TC
Reporting group description:	
Participants received ritonavir-boosted atazanavir (300/100 mg) plus lamivudine (300 mg) once daily for 48 weeks.	
Reporting group title	RTV-boosted ATV + 3TC
Reporting group description:	
Participants received ritonavir-boosted atazanavir (300/100 mg) plus lamivudine (300 mg) once daily for 48 weeks.	

Primary: Change in Bone Mineral Density (BMD) at the lumbar spine (L1–L4) from baseline to Week 48

End point title	Change in Bone Mineral Density (BMD) at the lumbar spine (L1–L4) from baseline to Week 48[1]
End point description:	
The primary outcome was the mean change in BMD (g/cm²) at the lumbar spine, measured by dual-energy X-ray absorptiometry (DXA), after switching to ritonavir-boosted atazanavir plus lamivudine.	
End point type	Primary
End point timeframe:	
Baseline to Week 48	

Notes:

[1] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: This is a single-arm, open-label pilot study. The primary endpoint was assessed as a within-group change from baseline to Week 48 using descriptive statistics and linear regression. As there is no comparator group, no formal statistical comparison between groups was applicable.

End point values	RTV-boosted ATV + 3TC			
Subject group type	Reporting group			
Number of subjects analysed	30[2]			
Units: g/cm²				
arithmetic mean (standard deviation)	0.010 (± 0.030)			

Notes:

[2] - Lumbar spine BMD

Statistical analyses

No statistical analyses for this end point

Primary: Change in Bone Mineral Density (BMD) at the left hip

End point title	Change in Bone Mineral Density (BMD) at the left hip[3]
End point description:	

End point type	Primary
End point timeframe:	
From baseline to Week 48	

Notes:

[3] - No statistical analyses have been specified for this primary end point. It is expected there is at least one statistical analysis for each primary end point.
Justification: This is a single-arm, open-label pilot study. The primary endpoint was assessed as a within-group change from baseline to Week 48 using descriptive statistics and linear regression. As there is no comparator group, no formal statistical comparison between groups was applicable.

End point values	RTV-boosted ATV + 3TC			
Subject group type	Reporting group			
Number of subjects analysed	30[4]			
Units: g/cm²				
arithmetic mean (standard deviation)	0.013 (± 0.030)			

Notes:

[4] - left hip

Statistical analyses

No statistical analyses for this end point

Adverse events

Adverse events information	
Timeframe for reporting adverse events: From informed consent to Week 48 (end of study visit)	
Assessment type	Systematic
Dictionary used	
Dictionary name	MedDRA
Dictionary version	22.1
Reporting groups	
Reporting group title	RTV-boosted ATV + 3TC

Reporting group description: -

Serious adverse events	RTV-boosted ATV + 3TC		
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 30 (0.00%)		
number of deaths (all causes)	0		
number of deaths resulting from adverse events	0		

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

Non-serious adverse events	RTV-boosted ATV + 3TC		
Total subjects affected by non-serious adverse events			
subjects affected / exposed	2 / 30 (6.67%)		
Hepatobiliary disorders			
Hiperbilirrubinemia			
subjects affected / exposed	2 / 30 (6.67%)		
occurrences (all)	2		

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

Limitations of the trial such as small numbers of subjects analysed or technical problems leading to unreliable data.

This pilot study had a small sample size and did not reach the planned enrollment of 45 participants. The final analysis included only 30 participants, which may limit the generalizability of the findings.

Notes:

Online references

http://www.ncbi.nlm.nih.gov/pubmed/35512339