



Clinical trial results:

Randomised controlled trial of Gestational treatment with Ursodeoxycholic Acid compared to Metformin to Reduce effects of Diabetes mellitus

Summary

EudraCT number	2019-002880-82
Trial protocol	GB
Global end of trial date	12 August 2025

Results information

Result version number	v1 (current)
This version publication date	20 August 2026
First version publication date	20 August 2026
Summary attachment (see zip file)	GUARD CSR 24Jul26 (GUARD CSR V1.0 24_7_2026.pdf)

Trial information

Trial identification

Sponsor protocol code	GUARD
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Additional study identifiers

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

Notes:

Sponsors

Sponsor organisation name	King's College London
Sponsor organisation address	KHPCTO F16, Guys Hospital, London, United Kingdom, SE1 9RT
Public contact	Professor Catherine Williamson, King's College London, +44 020 7848 6350, catherine.williamson@kcl.ac.uk
Scientific contact	Professor Catherine Williamson, King's College London, +44 020 7848 6350 , catherine.williamson@kcl.ac.uk
Sponsor organisation name	Guy's and St Thomas NHS Foundation Trust
Sponsor organisation address	KHPCTO F16, Guys Hospital, London, United Kingdom, SE1 9RT
Public contact	Professor Catherine Williamson, Guy's and St Thomas NHS Foundation Trust, +44 020 7848 6350, amy.holton@kcl.ac.uk
Scientific contact	Professor Catherine Williamson, Guy's and St Thomas NHS Foundation Trust, +44 020 7848 6350, amy.holton@kcl.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	No

1901/2006 apply to this trial?

Notes:

Results analysis stage

Analysis stage	Final
Date of interim/final analysis	29 May 2025
Is this the analysis of the primary completion data?	Yes
Primary completion date	03 October 2024
Global end of trial reached?	Yes
Global end of trial date	12 August 2025
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

We would like to assess how well ursodeoxycholic acid works at controlling glucose levels in overweight or obese women with gestational diabetes mellitus, compared to metformin, which is the most commonly used treatment.

Protection of trial subjects:

Participants have the right to withdraw from the study at any time for any reason. Trial committees (IDMC and TSC) will be appointed to oversee the conduct of the study. Monitoring to ensure compliance with Good Clinical Practice and scientific integrity will be managed and oversight retained by the KHP-CTO Quality Team.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	14 September 2020
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: 58
Worldwide total number of subjects	58
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)	3
Infants and toddlers (28 days-23 months)	0
Children (2-11 years)	0
Adolescents (12-17 years)	0

Adults (18-64 years)	55
From 65 to 84 years	0
85 years and over	0

Subject disposition

Recruitment

Recruitment details: -

Pre-assignment

Screening details: -

Pre-assignment period milestones

Number of subjects started	58
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Number of subjects completed	51
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Pre-assignment subject non-completion reasons

Reason: Number of subjects	Intolerance to study medication: 1
Reason: Number of subjects	Declined further blood sampling: 1
Reason: Number of subjects	Cannulation unsuccessful: 2
Reason: Number of subjects	Vasovagal episode following initial blood sampling: 1
Reason: Number of subjects	Gave birth abroad; did not return for follow-up: 1
Reason: Number of subjects	Did not attend study visit: 1

Period 1

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

Are arms mutually exclusive?	Yes
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Arm title	GDM taking metformin
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Arm description: -

Arm type	Experimental
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Investigational medicinal product name	Metformin
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Investigational medicinal product code	
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Other name	
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Pharmaceutical forms	Tablet
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Routes of administration	Oral use
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Dosage and administration details:

Metformin dose escalation scheme as per their standard of care

Arm title	GDM managed with lifestyle only
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Arm description: -

Arm type	No active
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Investigational medicinal product name	Ursodeoxycholic Acid
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Investigational medicinal product code	
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Other name	
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Pharmaceutical forms	Tablet
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Routes of administration	Oral use
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Dosage and administration details:

500mg BD

Arm title	No GDM (control)
Arm description: -	
Arm type	No intervention
No investigational medicinal product assigned in this arm	

Number of subjects in period 1^[1]	GDM taking metformin	GDM managed with lifestyle only	No GDM (control)
Started	10	22	19
Completed	8	21	16
Not completed	2	1	3
Lost to follow-up	-	1	-
Withdrew before first sample	-	-	2
Withdrew after fasting sample	2	-	-
Did not attend study day	-	-	1

Notes:

[1] - 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: we do not count screening participants as enrolled

Baseline characteristics

Reporting groups

Reporting group title	GDM taking metformin
Reporting group description: -	
Reporting group title	GDM managed with lifestyle only
Reporting group description: -	
Reporting group title	No GDM (control)
Reporting group description: -	

Reporting group values	GDM taking metformin	GDM managed with lifestyle only	No GDM (control)
Number of subjects	10	22	19
Age categorical Units: Subjects			
In utero Preterm newborn infants (gestational age < 37 wks) Newborns (0-27 days) Infants and toddlers (28 days-23 months) Children (2-11 years) Adolescents (12-17 years) Adults (18-64 years) From 65-84 years 85 years and over			
Age continuous Units: years			
median	37	33	35
inter-quartile range (Q1-Q3)	33 to 39	32 to 37	31 to 37
Gender categorical Units: Subjects			
Female	10	22	19
Male	0	0	0

Reporting group values	Total		
Number of subjects	51		
Age categorical Units: Subjects			
In utero Preterm newborn infants (gestational age < 37 wks) Newborns (0-27 days) Infants and toddlers (28 days-23 months) Children (2-11 years) Adolescents (12-17 years) Adults (18-64 years) From 65-84 years 85 years and over	0 0 0 0 0 0 0 0		

Age continuous Units: years median inter-quartile range (Q1-Q3)	-		
Gender categorical Units: Subjects			
Female	51		
Male	0		

End points

End points reporting groups

Reporting group title	GDM taking metformin
Reporting group description: -	
Reporting group title	GDM managed with lifestyle only
Reporting group description: -	
Reporting group title	No GDM (control)
Reporting group description: -	

Primary: Hba1c

End point title	Hba1c ^[1]
End point description: The study was ceased before sufficient participants were recruited for meaningful analysis, the decision was made not to analyse data from GUARD IMP-receiving participants from the main study. Therefore, no primary outcome data were compared.	
End point type	Primary
End point timeframe: Baseline	

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: Please see uploaded report

End point values	GDM taking metformin	GDM managed with lifestyle only	No GDM (control)	
Subject group type	Reporting group	Reporting group	Reporting group	
Number of subjects analysed	10	22	16	
Units: mmol/mol				
median (inter-quartile range (Q1-Q3))	36.5 (33.0 to 43.3)	35.0 (29.0 to 36.0)	32.0 (30 to 33.3)	

Statistical analyses

No statistical analyses for this end point

Adverse events

Adverse events information

Timeframe for reporting adverse events:

baseline to 32 weeks

Assessment type	Non-systematic
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Dictionary used

Dictionary name	MedDRA
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Dictionary version	26.1
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Reporting groups

Reporting group title	GDM taking metformin
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Reporting group description: -

Reporting group title	GDM managed with lifestyle only
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Reporting group description: -

Serious adverse events	GDM taking metformin	GDM managed with lifestyle only	
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 10 (0.00%)	1 / 21 (4.76%)	
number of deaths (all causes)	0	0	
number of deaths resulting from adverse events	0	0	
Pregnancy, puerperium and perinatal conditions			
Pre-eclampsia			
subjects affected / exposed	0 / 10 (0.00%)	1 / 21 (4.76%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	

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

Non-serious adverse events	GDM taking metformin	GDM managed with lifestyle only	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	1 / 10 (10.00%)	1 / 21 (4.76%)	
Pregnancy, puerperium and perinatal conditions			
Pre-eclampsia			
subjects affected / exposed	0 / 10 (0.00%)	1 / 21 (4.76%)	
occurrences (all)	0	1	
Nervous system disorders			

Syncope			
subjects affected / exposed	1 / 10 (10.00%)	0 / 21 (0.00%)	
occurrences (all)	1	0	

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? Yes

Date	Amendment
29 July 2020	SA01 - PIS-ICF v2.0 29JUL20, Summary PIS v2.0 30OCT20, Stool collection instructions v2.0 26OCT20 and Payment of Compensation form
24 May 2021	SA02 - Informing the competent authority of the outcome of the CI's assessment and decision that COVID-19 vaccine given to a trial participant is considered as a simple concomitant medication with no interaction that requires advice on timing of the vaccine or other aspects.
29 March 2022	SA03 - Protocol V4.0 21Oct21, PIS ICF V2.2 21Oct21, GUARD MECV 2.0 21Oct21, Summary PIS V3.0 21Oct21, Patient poster V1.0 21Oct21, GUARD website contents V1.0 21Oct21
07 June 2022	SA04 - Protocol V5.0 22Mar22, PIS ICF V2.3 22Mar22, GUARD MEC V2.1 22Mar22, Summary PIS V3.1 22Mar22
19 April 2023	SA05 - Notification to the REC of halting recruitment to the CTIMP arms of the GUARD trial.
06 October 2023	SA06 - Protocol V5.1 11Oct23, Caroline Ovadia Research CV, Caroline Ovadia GCP certificate
14 August 2024	SA07 - Protocol V6.0 08July2024, PIS ICF V2.2 13Mar24

Notes:

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

None reported