



Clinical trial results:

An Open-Label, Multi-Center, Single-Dose Study to Assess the Safety, Tolerability, Pharmacodynamics, and Pharmacokinetics of Nasal Glucagon in Pediatric Patients with Type 1 Diabetes Aged 1 to <4 years

Summary

EudraCT number	2021-006088-61
Trial protocol	Outside EU/EEA
Global end of trial date	05 November 2023

Results information

Result version number	v1 (current)
This version publication date	18 May 2024
First version publication date	18 May 2024

Trial information

Trial identification

Sponsor protocol code	I8R-MC-IGBO
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Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT04992312
WHO universal trial number (UTN)	-
Other trial identifiers	Trial Number: 17449

Notes:

Sponsors

Sponsor organisation name	Eli Lilly and Company
Sponsor organisation address	Lilly Corporate Center, Indianapolis, IN, United States, 46285
Public contact	Available Mon - Fri 9 AM - 5 PM EST, Eli Lilly and Company, 1 877CTLilly,
Scientific contact	Available Mon - Fri 9 AM - 5 PM EST, Eli Lilly and Company, 1 8772854559,

Notes:

Paediatric regulatory details

Is trial part of an agreed paediatric investigation plan (PIP)	Yes
EMA paediatric investigation plan number(s)	EMA-001657-PIP01-14
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?	Yes

Notes:

Results analysis stage

Analysis stage	Final
Date of interim/final analysis	05 November 2023
Is this the analysis of the primary completion data?	No
Global end of trial reached?	Yes
Global end of trial date	05 November 2023
Was the trial ended prematurely?	No

Notes:

General information about the trial

Main objective of the trial:

The main purpose of this study is to evaluate the safety and tolerability of a study drug called nasal glucagon (Baqsimi) in pediatric participants with type 1 diabetes (T1D) aged 1 to less than 4 years. Blood tests will be performed to check how much nasal glucagon gets into the bloodstream. Blood sugar will also be measured to understand the effect of the drug on blood sugar levels. The study consists of a screening period up to 35 days before dosing, 1 day when a dose of nasal glucagon will be given and then 2 telephone follow up calls; first follow-up call on the day after the nasal glucagon was given and second call about one week after nasal glucagon was given. The study will last up to 9 days, not including the screening period.

Protection of trial subjects:

This study was conducted in accordance with International Conference on Harmonization (ICH) Good Clinical Practice, and the principles of the Declaration of Helsinki, in addition to following the laws and regulations of the country or countries in which a study is conducted.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	24 March 2022
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	United States: 7
Worldwide total number of subjects	7
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)	1
Children (2-11 years)	6
Adolescents (12-17 years)	0

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

Subject disposition

Recruitment

Recruitment details:

No Text Available

Pre-assignment

Screening details:

No Text Available

Period 1

Period 1 title	Overall Study (overall period)
Is this the baseline period?	Yes
Allocation method	Not applicable
Blinding used	Not blinded

Arms

Arm title	3 milligram (mg) nasal glucagon
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Arm description:

Participants received a single dose of 3 mg glucagon powder administered intranasally on day 1.

Arm type	Experimental
Investigational medicinal product name	nasal glucagon
Investigational medicinal product code	
Other name	Baqsimi
Pharmaceutical forms	Nasal powder in single-dose container
Routes of administration	Intranasal use

Dosage and administration details:

Participants received a single dose of 3 mg glucagon powder administered intranasally on day 1.

Number of subjects in period 1	3 milligram (mg) nasal glucagon
Started	7
received at least one dose of study drug	7
Completed	7

Baseline characteristics

Reporting groups

Reporting group title	Overall Study
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Reporting group description: -

Reporting group values	Overall Study	Total	
Number of subjects	7	7	
Age categorical			
Units: Subjects			

Age continuous			
Units: years			
arithmetic mean	2.98		
standard deviation	± 0.82	-	
Gender categorical			
Units: Subjects			
Female	3	3	
Male	4	4	
Ethnicity (NIH/OMB)			
Units: Subjects			
Hispanic or Latino	1	1	
Not Hispanic or Latino	6	6	
Unknown or Not Reported	0	0	
Race (NIH/OMB)			
Units: Subjects			
American Indian or Alaska Native	0	0	
Asian	0	0	
Native Hawaiian or Other Pacific Islander	0	0	
Black or African American	0	0	
White	7	7	
More than one race	0	0	
Unknown or Not Reported	0	0	
Region of Enrollment			
Units: Subjects			
United States	7	7	

Subject analysis sets

Subject analysis set title	3 mg nasal glucagon
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Subject analysis set type	Per protocol
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Subject analysis set description:

Participants received a single dose of 3 mg glucagon powder administered intranasally on day 1.

Reporting group values	3 mg nasal glucagon		
Number of subjects	7		

Age categorical Units: Subjects			
Age continuous Units: years arithmetic mean standard deviation	2.98 ± 0.82		
Gender categorical Units: Subjects			
Female	3		
Male	4		
Ethnicity (NIH/OMB) Units: Subjects			
Hispanic or Latino	1		
Not Hispanic or Latino	6		
Unknown or Not Reported	0		
Race (NIH/OMB) Units: Subjects			
American Indian or Alaska Native	0		
Asian	0		
Native Hawaiian or Other Pacific Islander	0		
Black or African American	0		
White	7		
More than one race	0		
Unknown or Not Reported	0		
Region of Enrollment Units: Subjects			
United States	7		

End points

End points reporting groups

Reporting group title	3 milligram (mg) nasal glucagon
Reporting group description:	
Participants received a single dose of 3 mg glucagon powder administered intranasally on day 1.	
Subject analysis set title	3 mg nasal glucagon
Subject analysis set type	Per protocol
Subject analysis set description:	
Participants received a single dose of 3 mg glucagon powder administered intranasally on day 1.	

Primary: Number of Participants with One or More Treatment-Emergent Adverse Event(s) (TEAEs) and Serious Adverse Event(s) (SAEs) Considered by the Investigator to be Related to Study Drug Administration

End point title	Number of Participants with One or More Treatment-Emergent Adverse Event(s) (TEAEs) and Serious Adverse Event(s) (SAEs) Considered by the Investigator to be Related to Study Drug Administration ^[1]
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End point description:

A TEAE is defined as an adverse event which occurs post-dose or which is present prior to dosing and becomes more severe post-dose. An SAE is any AE from the study that results in 1 of the following: Death, initial or prolonged inpatient hospitalization, a life-threatening experience (i.e., immediate risk of dying), persistent or significant disability/incapacity, congenital anomaly/birth defect, important medical events that may not be immediately life-threatening or result in death or hospitalization but may jeopardize the subject or may require intervention to prevent 1 of the other outcomes listed in the definition above. The number of participants with one or more TEAEs, SAEs considered by the investigator to be related to study drug administration is reported here. A summary of SAEs and other non-serious AEs, regardless of causality is located in the Reported Adverse Events section of this record.

End point type	Primary
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End point timeframe:

Baseline to Day 9

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: No inferential statistics were planned for this endpoint.

End point values	3 mg nasal glucagon			
Subject group type	Subject analysis set			
Number of subjects analysed	7 ^[2]			
Units: participants				
TEAEs	5			
SAEs	0			

Notes:

[2] - All participants who received at least one dose of study drug.

Statistical analyses

No statistical analyses for this end point

Secondary: Pharmacodynamics (PD): Change From Baseline in Maximum Observed Blood Glucose (BG_{max})

End point title	Pharmacodynamics (PD): Change From Baseline in Maximum
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End point description:

Change from baseline in BGmax was measured to investigate the PD effect of nasal glucagon on blood glucose level following 3 mg nasal glucagon administration on day 1. Baseline is defined as Day 1 pre-dose. The BGmax on Day 1 was determined using plasma samples collected pre-dose, 10, 30, 60, and 90 minutes post nasal glucagon dose.

End point type	Secondary
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End point timeframe:

Baseline, Day 1 (pre-dose, 10, 30, 60, 90 minutes post-dose)

End point values	3 mg nasal glucagon			
Subject group type	Subject analysis set			
Number of subjects analysed	7 ^[3]			
Units: milligrams per deciliter (mg/dL)				
arithmetic mean (standard deviation)	132.4 (± 52.4)			

Notes:

[3] - All participants who received at least one dose of study drug and had evaluable PD data.

Statistical analyses

No statistical analyses for this end point

Secondary: PD: Absolute BGmax of Nasal Glucagon

End point title	PD: Absolute BGmax of Nasal Glucagon
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End point description:

PD: Absolute BGmax of Nasal Glucagon

End point type	Secondary
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End point timeframe:

Day 1 (Pre-dose, 10, 30, 60, 90 minutes post-dose)

End point values	3 mg nasal glucagon			
Subject group type	Subject analysis set			
Number of subjects analysed	7 ^[4]			
Units: mg/dL				
arithmetic mean (standard deviation)	242.1 (± 46)			

Notes:

[4] - All participants who received at least one dose of study drug and had evaluable PD data.

Statistical analyses

No statistical analyses for this end point

Secondary: PD: Time of Maximum Observed Blood Glucose (TBGmax) of Nasal Glucagon

End point title	PD: Time of Maximum Observed Blood Glucose (TBGmax) of Nasal Glucagon
End point description: PD: TBGmax of Nasal Glucagon	
End point type	Secondary
End point timeframe: Day 1 (Pre-dose, 10, 30, 60, 90 minutes post-dose)	

End point values	3 mg nasal glucagon			
Subject group type	Subject analysis set			
Number of subjects analysed	7 ^[5]			
Units: minutes				
arithmetic mean (standard deviation)	55.6 (± 20.9)			

Notes:

[5] - All participants who received at least one dose of study drug and had evaluable PD data.

Statistical analyses

No statistical analyses for this end point

Secondary: PD: Area Under the Concentration Versus Time Curve (AUC) of Blood Glucose

End point title	PD: Area Under the Concentration Versus Time Curve (AUC) of Blood Glucose
End point description: AUC from time 0 to the last measured concentration of blood glucose at 90 minutes [AUC(0-90)] is reported.	
End point type	Secondary
End point timeframe: Day 1 (Pre-dose, 10, 30, 60, 90 minutes post-dose)	

End point values	3 mg nasal glucagon			
Subject group type	Subject analysis set			
Number of subjects analysed	7 ^[6]			
Units: milligram*minute per deciliter (mg*m/dL)				
arithmetic mean (standard deviation)	18200 (± 3000)			

Notes:

[6] - All participants who received at least one dose of study drug and had evaluable PD data.

Statistical analyses

No statistical analyses for this end point

Secondary: Pharmacokinetics (PK): AUC of Nasal Glucagon

End point title	Pharmacokinetics (PK): AUC of Nasal Glucagon
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End point description:

Geometric coefficient of variation value given in percentage.

End point type	Secondary
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End point timeframe:

Day 1 (10, 30, 60 min post-dose)

End point values	3 mg nasal glucagon			
Subject group type	Subject analysis set			
Number of subjects analysed	7 ^[7]			
Units: picogram*hour per milliliter (pg*hr/mL)				
geometric mean (geometric coefficient of variation)	1560 (± 25.3)			

Notes:

[7] - All participants who received at least one dose of study drug and had evaluable PK data.

Statistical analyses

No statistical analyses for this end point

Adverse events

Adverse events information

Timeframe for reporting adverse events:

Baseline to Day 9

Adverse event reporting additional description:

All participants who received at least one dose of study drug.

Assessment type	Systematic
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Dictionary used

Dictionary name	MedDRA
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Dictionary version	24.0
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Reporting groups

Reporting group title	3 mg nasal glucagon
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Reporting group description:

Participants received a single dose of 3 mg glucagon powder administered intranasally on day 1.

Serious adverse events	3 mg nasal glucagon		
Total subjects affected by serious adverse events			
subjects affected / exposed	0 / 7 (0.00%)		
number of deaths (all causes)	0		
number of deaths resulting from adverse events			

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

Non-serious adverse events	3 mg nasal glucagon		
Total subjects affected by non-serious adverse events			
subjects affected / exposed	5 / 7 (71.43%)		
Eye disorders			
eye pruritus			
alternative dictionary used: MedDRA 24.0			
subjects affected / exposed	1 / 7 (14.29%)		
occurrences (all)	1		
Gastrointestinal disorders			
abdominal discomfort			
alternative dictionary used: MedDRA 24.0			
subjects affected / exposed	1 / 7 (14.29%)		
occurrences (all)	1		
vomiting			

<p>alternative dictionary used: MedDRA 24.0</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p>	<p>1 / 7 (14.29%)</p> <p>1</p>		
<p>nausea</p> <p>alternative dictionary used: MedDRA 24.0</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p>	<p>1 / 7 (14.29%)</p> <p>1</p>		
<p>post-tussive vomiting</p> <p>alternative dictionary used: MedDRA 24.0</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p>	<p>1 / 7 (14.29%)</p> <p>1</p>		
<p>dyspepsia</p> <p>alternative dictionary used: MedDRA 24.0</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p>	<p>1 / 7 (14.29%)</p> <p>1</p>		
<p>Respiratory, thoracic and mediastinal disorders</p> <p>epistaxis</p> <p>alternative dictionary used: MedDRA 24.0</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p> <p>sneezing</p> <p>alternative dictionary used: MedDRA 24.0</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p> <p>nasal discomfort</p> <p>alternative dictionary used: MedDRA 24.0</p> <p>subjects affected / exposed</p> <p>occurrences (all)</p>	<p>1 / 7 (14.29%)</p> <p>1</p> <p>1 / 7 (14.29%)</p> <p>1</p> <p>1 / 7 (14.29%)</p> <p>1</p>		

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