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Type 1 insulin dosing strategies and eating behaviours

Submission date	Recruitment status	[_] Prospectively registered
05/08/2026	Recruiting	[_] Protocol
Registration date	**Overall study status**	[X] Statistical analysis plan
06/08/2026	Ongoing	[_] Results
Last Edited	**Condition category**	[_] Individual participant data
05/08/2026	Nutritional, Metabolic, Endocrine	[X] Record updated in last year

Plain English summary of protocol

Background and study aims

People with type 1 diabetes are at a higher risk of developing unhealthy eating behaviours than people without diabetes. Some young people with type 1 diabetes report that managing their insulin doses and counting carbohydrates in food can affect their relationship with eating. This study aims to learn more about the different ways young people with type 1 diabetes calculate insulin doses and estimate the carbohydrate content of foods. The researchers want to find out whether certain insulin dosing strategies are linked to eating behaviours or a greater risk of disordered eating. The study will also test two new research tools designed to measure insulin dosing strategies and carbohydrate-counting skills.

Who can participate?

People may be able to take part if they:

1. Are aged 12 to 25 years
2. Have been diagnosed with type 1 diabetes for at least 3 months
3. Can read and understand written English
4. Live in England, Scotland, or Wales

What does the study involve?

Participants may take part in one of two stages of the study.

The first stage involves an online interview using Microsoft Teams. Participants will complete an online survey and may be asked to talk through their thoughts while answering questions. They will be able to discuss any questions they find unclear or difficult. They may also complete activities that involve estimating the carbohydrate content of meals shown in photographs.

The second stage involves completing an online survey. The survey includes questions about insulin dosing, eating behaviours, diabetes experiences, health, social support, and diabetes management. Some participants may also be asked to complete an additional questionnaire about eating-related problems if their initial survey responses suggest this would be useful.

Up to 50 participants may be invited to complete some of the questionnaires a second time within 2 weeks so that researchers can assess how reliable the study tools are.

At the end of the survey, participants will be provided with information about sources of support for diabetes and eating disorders. Participants can also choose to enter a prize draw for a £50 Amazon voucher.

What are the possible benefits and risks of participating?
Participants may not receive any direct health benefit from taking part. However, their involvement could help researchers better understand how young people with type 1 diabetes manage insulin dosing and how this may affect eating behaviours. The findings may help improve future research and support for people with type 1 diabetes.
Some questions may ask about eating habits, diabetes management, and personal experiences, which some participants may find upsetting or uncomfortable. Information about support services for diabetes and eating disorders will be provided to all participants.

Where is the study run from?
The study is run from the NIHR Bristol Biomedical Research Centre at University Hospitals Bristol NHS Foundation Trust in Bristol, United Kingdom.

When is the study starting and how long is it expected to run for?
July 2026 to October 2027.

Who is funding the study?
The study is funded by the University of Bristol and the NIHR Bristol Biomedical Research Centre.

Who is the main contact?
Karen Rigby, Karen.rigby@bristol.ac.uk

Contact information

Type(s)
Public, Scientific, Principal investigator

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Study information

Scientific Title
Exploring the influence of type 1 diabetes insulin dosing strategies (including carbohydrate counting) on eating behaviours and disordered eating in young people

Acronym
T1IDES

Study objectives
1. Scale development & Usability: scale development of the Type 1 Insulin Dosing Strategies Inventory (T1IDSI) and usability of the Type 1 Carbohydrate Counting Capability (T1CCC tool)
2. Cognitive Interviews. Construct validity: T1IDSI
a. Test-Retest Reliability: retesting 50 participants
b. Hypothesis Testing: Using a 120 item survey combining the T1IDSI & a 20 item questionnaire measuring for eating disorder level of risk (DEB from combined Screen for Early Eating Disorder Signs SEEDS2 and Diabetes Eating Problem – Revised questionnaire DEPS-R3 score) and bespoke data collection (demographics and health data, including experience of severe hypoglycaemia questions and attitudes to blood glucose fluctuations; and diabetes management)
Hypotheses:
1. Young people with T1D use a variety of insulin dosing strategies
2. Past research has shown an association between lack of adherence to recommended self-management strategies and suboptimal HbA1c4 5– Young people using strategies misaligned to clinical guidance are more likely to report higher HbA1c than young people using precise or flexible strategies
3. Past research has also shown an association between lack of adherence to recommended self-management strategies and DEB6 - Young people using strategies misaligned to clinical guidance are more likely to score highly for DEB than young people who use precise or flexible strategies
4. Using strategies misaligned to clinical guidance for calculating carbohydrate may have more of an impact on HbA1c than using strategies misaligned to clinical guidance in other T1IDSI domains
5. Young people with T1D are likely to use clinically recommended insulin dosing strategies in the first year of diagnosis, and more likely to adopt flexible or misaligned strategies as disease duration increases
6. People diagnosed at a younger age, with initial parent-led care, may be more likely to deviate from clinically recommended insulin dosing strategies
7. People who transition to self-care at a younger age may be more likely to use insulin dosing strategies that deviate from those that are clinically recommended
8. People who with experience of severe hypoglycaemia may be more likely to choose strategies that are misaligned to clinical guidance
9. People who with experience of severe hyperglycaemia may be more likely to choose strategies that are misaligned to clinical guidance
10. People with lower scores for diabetes management (prioritisation of diabetes, and social support) may be more likely to choose strategies that are misaligned to clinical guidance
11. People with lower scores for diabetes management may be more likely to choose strategies misaligned to clinical guidance in some T1IDSI domains than others

3. Validity of Capability Tool: T1CCC Tool (Dependent on participant burden during cognitive interviews. If participants feel that the requirement to complete the survey and the tool tasks is too onerous only the T1IDSI will be piloted for construct validity)
a. Test Retest Reliability: retesting 50 participants
b. Hypothesis Testing: T1CCC Tool & T1IDSI/disordered eating (Combined scores from Screen for Early Eating Disorder Signs SEEDS2, Disordered Eating in Diabetes DEPS-R3)/ bespoke data collection – health, demographic and diabetes management.
c. Hypotheses:
1. Young people early post-diagnosis will score higher for estimation accuracy than those with longer duration of disease.

2. For early onset diabetes, capability scores for estimation accuracy will decrease with age (as young people may not account for increased meal portions as they grow)
3. Capability scores for estimation accuracy will vary according to the use of flexible, precise or misaligned insulin dose strategies
4. Negative attitudes towards diabetes management will increase with decreased estimation accuracy
5. DEB will increase with decreased estimation accuracy

Ethics approval required
Ethics approval required

Ethics approval(s)
Approved 19/12/2025, University of Bristol WS1- Research Ethics Review Committee (Beacon House, Queens Road, Bristol, BS8 1QU, United Kingdom; +44 1179 289000; research-ethics@bristol.ac.uk), ref: 28854

Primary study design
Observational

Secondary study design
Cross sectional study

Study type(s)

Health condition(s) or problem(s) studied
Type 1 diabetes

Interventions
Cognitive Interviews: Advertisements placed online and shared via social media networks, DiabetesUK and Breakthrough T1D with invite young people aged 12 to 25 interested in taking part to contact Karen Rigby via email. Upon contact they will be given participant information and asked to complete a informed consent (young people under 16 will also require parental consent) if they are still happy to take part. Young people who have completed informed consent will be invited to attend an online interview. Cognitive interviews will take place online using Microsoft Teams. The survey will be completed online via a link shared young people expressing an interest in taking part who have completed consent. The online survey will contain the questionnaires (T1IDSI and Screen for Early Eating Disorders Signs - SEEDS) as well as bespoke questions about demographics, diabetes experiences, feelings about glucose fluctuations and social support and a link to complete the tasks in the T1CCC tool which contains photographs of a series of meals and asks participants to guess the carbohydrate content in each meal. Participants will be encouraged to talk aloud as they complete the survey and discuss any questions that they find difficult to understand or answer. The interviews will be analysed and appropriate changes to the survey will be made.

Pilot of Online Survey: Advertisements placed online and shared via social media networks, DiabetesUK and Breakthrough T1D with invite young people aged 12 to 25 interested in taking part to either click on the link to the online survey or contact Karen Rigby via email who will provide them with a link. The survey link will open directly on to participant information and then participants will be asked to complete a series of informed consent questions (young people under 16 will be asked to share their screen with a parent or guardian to provide parental consent) before continuing on to the survey questions.

Participants with high screening scores for SEEDS2 will also be invited to complete the Diabetes Eating Problems Survey - Revised (DEPS-R), based on the current Bristol paediatric team guidelines for the screening of eating disorders. Participants will be invited to give their email address if they would like to be added to a prize draw for a £50 Amazon voucher. At the end of the survey all participants will be sign posted to support contacts for diabetes and eating disorders.

Intervention Type
Behavioural

Primary outcome(s)
1. Disordered Eating Behaviour measured using Diabetes Eating Problems Survey- Revised (DEPS-R) at survey completion

Key secondary outcome(s)

Completion date
01/10/2027

Eligibility

Key inclusion criteria
1. Diagnosed with type 1 diabetes ≥ 3 months
2. Aged 12 to 25 years
3. Ability to read and understand written English
4. Living in England, Scotland or Wales

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
12 Years

Upper age limit
25 Years

Sex
All

Total final enrolment
0

Key exclusion criteria
1. Diagnosed with T1D < 3 months
2. Aged 11 years or younger, or 26 years or older

Date of first enrolment

02/07/2026

Date of final enrolment
31/12/2026

Locations

Countries of recruitment
United Kingdom

England

Scotland

Wales

Study participating centre
NIHR Bristol Biomedical Research Centre
University Hospitals Bristol NHS Foundation Trust
Marlborough Street
Bristol
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Sponsor information

Organisation
University of Bristol

ROR
https://ror.org/0524sp257

Funder(s)

Funder type

Funder Name
University of Bristol

Alternative Name(s)
Universitas Bristolliensis, bristoluniversity, bristoluni

Funding Body Type
Government organisation

Funding Body Subtype
Universities (academic only)

Location
United Kingdom

Funder Name
NIHR Bristol Biomedical Research Centre

Alternative Name(s)
NIHR Biomedical Research Centre Bristol, National Institute for Health Research Bristol Biomedical Research Centre, NIHR Bristol BRC, Bristol BRC, Bristol Biomedical Research Centre

Funding Body Type
Private sector organisation

Funding Body Subtype
Research institutes and centers

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Statistical Analysis Plan	version 1	13/11/2025	05/08/2026	No	No