Diabetes and eating disorders

Workshop D

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ABCD Diabetes Clinical Update
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Loughborough

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Diabetes and Eating disorders

- Basics
  - Eating disorders
  - T1 diabetes and eating disorder
  - T2 diabetes and eating disorder
- Clinical experience and evidence, practical tips
- Cases

  (content warning)

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What are Eating Disorders?

- Serious mental health disorders with physical health complications
- Highest mortality rate of all psychiatric disorders (Striegal-Moore & Bulik, 2007)
- Vary in severity: disordered eating , to mild, to severe and enduring (>7 years)
- Anorexia nervosa
- Bulimia nervosa
- OSFED (other specified feeding/ED)
- Binge eating disorder
- Comorbidities common

Anorexia Nervosa

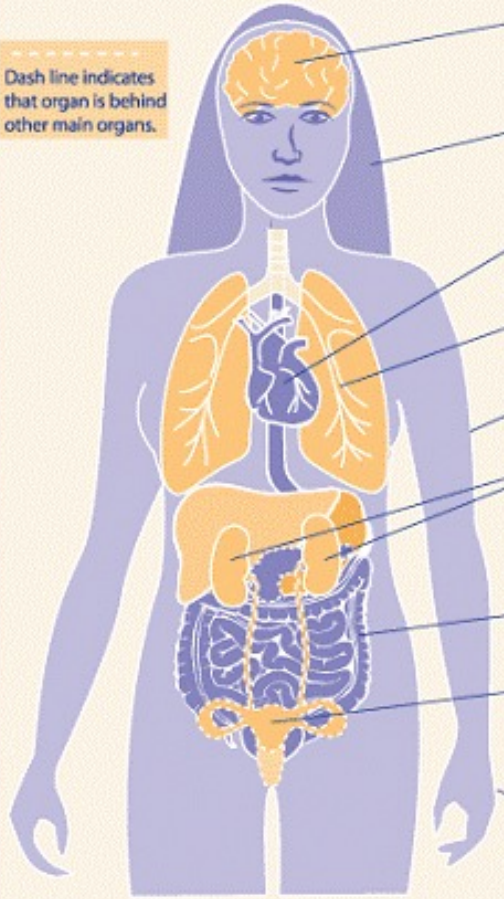
- First defined by the Queen's Doctor, Sir William Gull *(1868 Lancet ii 171-176)*

- Refusal to maintain body weight at or above a minimally normal weight for age and height
- Intense fear of gaining weight or becoming fat, even though underweight.
- Disturbance in the way in which body weight or shape is experienced
- Amenorrhoea no longer required
- **Restricting Type**
- **Binge-Eating/Purging Type**

Physical Signs

- Dizziness when standing up
- Weakened muscles
- Tiredness
- Fidgeting
- Cold blue hands, nose and feet.
- Lanugo hair

Anorexia affects your whole body



Brain and Nerves
can't think right, fear of gaining weight, sad, moody, irritable, bad memory, fainting, changes in brain chemistry

Hair
hair thins and gets brittle

Heart
low blood pressure, slow heart rate, fluttering of the heart (palpitations), heart failure

Blood
anemia and other blood problems

Muscles and Joints
weak muscles, swollen joints, fractures, osteoporosis

Kidneys
kidney stones, kidney failure

Body Fluids
low potassium, magnesium, and sodium

Intestines
constipation, bloating

Hormones
periods stop, bone loss, problems growing, trouble getting pregnant. If pregnant, higher risk for miscarriage, having a C-section, baby with low birthweight, and post partum depression.

Skin
bruise easily, dry skin, growth of fine hair all over body, get cold easily, yellow skin, nails get brittle

Bulimia Nervosa

- First described by Prof G Russell in 1979
- DSM 5 (2013): Recurrent episodes of binge eating: large amount plus loss of control
- Recurrent inappropriate compensatory behaviours in order to prevent weight gain
- Both once a week for 3 months+
- Self-evaluation unduly influenced by body shape and weight.
- **Purging type**
- **Nonpurging type**

Physical Signs

- Parotid or submandibular gland enlargement
- Eroded teeth
- "Russell's sign" - callus on back of hand
- Cold blue hands, nose and feet
- Lanugo hair

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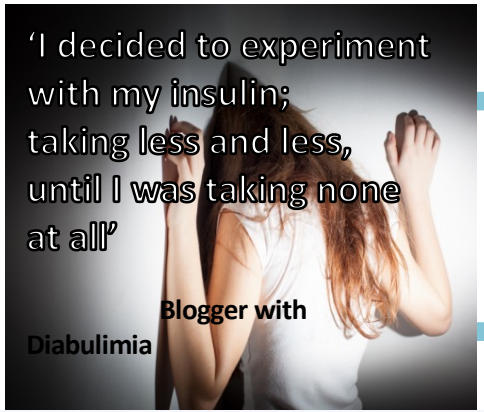
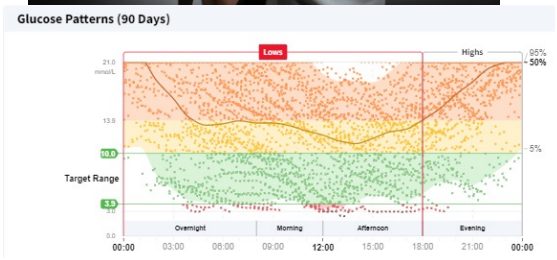
Type 1 diabetes disordered eating (T1DE) – more common than you may think…

ED is twice as common in people with T1DM than in those without [4]

30% of women [1,2] and 7% of men [3] with T1DM restrict insulin to control weight





Ketoacidosis & severe hypoglycaemia rates increased [5]

Accelerated late complications [1]

3-fold higher mortality than T1DM without ED [1]

[1] Goebel-Fabri et al, Diabetes Care 2008; [2] Polonsky WH et al, Diabetes Care 1994; [3] Bachle C et al, Plos One 2015; [4] Jones JM et al, BMJ 2000; [5] Scheuing N et al, Diabetes Care 2014

Definition of T1DE and risk assessment- MEED (medical emergencies in eating disorders) RCPsych guidance

First national T1DE guidance

Box 1: Proposed diagnostic criteria for TIDE

People with type 1 diabetes who present with all three criteria:

1. Intense fear of gaining weight, or body image concerns, or fear of insulin promoting weight gain.
2. Recurrent inappropriate direct or indirect* restriction of insulin (and/or other compensatory behaviour**) to prevent weight gain.
3. Presenting with a degree of insulin restriction, eating or compensatory behaviours that cause at least one of the following:
   - harm to health
   - clinically significant diabetes distress
   - impairment on daily functioning.

* Indirect restriction of insulin refers to reduced insulin need/use due to significant carbohydrate restriction.

** Dietary restriction, self-induced vomiting, laxative use, excessive exercise, over-use of thyroid hormones, over-use of diabetes medication believed to avoid weight gain or promote weight loss.

Editors

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https://www.rcpsych.ac.uk/docs/default-source/improving-care/better-mh-policy/college-reports/college-report-cr233---annexe-3.pdf

Defining severe T1DE

King's Health Partners definition of type 1 diabetes and disordered eating (T1DE)

T1DE core criteria (all 3):

- Type 1 diabetes
- pervasive fear of insulin as weight gaining
- **insulin restriction/omission (direct or indirect)**

Severity criteria (1 or more):

- **HbA1c>10%**
- **BMI <15kg/m2**
- **severe hypoglycaemia**
- **DKA admission in last 12 months**

Diabetes acute complication risks:
Diabetes ketoacidosis rates in T1DE

Pan-London-T1DE:

0.72 episodes per patient per year (21 admissions in 29 patients diabetic ketoacidosis -DKA) [1]

Comparison: DAFNE-data base UK:

0.07 episodes per year per person in a cohort of people with T1DM prior to attending diabetes structured education [2]

10- fold higher DKA rates

DPV clinical registry:

ketoacidosis rates:

No ED: 5.7 +/- 0.1 vs.

Anorexia nervosa: 12.1 +/- 2.1,

Bulimia nervosa: 18.0 +/- 4.1, or

EDNOS 12.9 +/- 1.6 events per 100 person-years [3]

2 to 3- fold higher DKA rates

[2] Elliott J et al Diabet Med. 2014 ; [1] Stadler M et al, manuscript in preparation;
[3] Scheunig N et al, Diabetes Care 2014

Diabetes chronic complications and mortality risks:
Insulin Restriction and Associated Morbidity and Mortality in Women with Type 1 Diabetes
11- year follow up (234 women)

30% reported **insulin restriction** at baseline

<u>insulin restrictors</u>

younger (aged 32 vs. 36 years) and had **higher A1C** values (9.6 vs. 8.3%), but **no difference in diabetes duration or BMI**

2 to 2.5 -times higher proportion of **late complications**: nephropathy (25 vs. 10%) and foot problems (25 vs. 12%) at follow-up.

increased relative risk of death during the 11- year study period by **3.2 times**

Goebel-Fabri A et al, Diabetes Care 2008

Work in progress:
defining subtypes of eating disorders in type 1 diabetes
overview

Type 1 diabetes and eating disorder/ disordered eating= T1DE

DSM-5 diagnosable ED is twice as common in people with T1DM than in those without [4]

30% of women [1,2] and 7% of men [3] with T1DM restrict insulin to control weight

Classical Eating disorders per DSM-5 plus type 1 diabetes

Anorexia nervosa + **T1D**

Bulimia nervosa + **T1D**

Binge eating disorder + **T1D**

OSFED + T1D

Type 1 diabetes- specific disordered eating subtypes

?

1 Goebel-Fabri et al, Diabetes Care 2008; 2 Polonsky WH et al, Diabetes Care 1994;
3 Bachle C et al, Plos One 2015

[4]Jones JM et al, BMJ 2000

APA (Eds.) (2013) *Diagnostic and statistical manual of mental disorders: DSM-5*. 5th edn. Washington, DC: American Psychiatric Association.

T2DM and eating disorders

Type 2 diabetes and eating disorders

Binge eating disorder (BED) and bulimia triple the risk for T2DM [2]

??

3.2 mill adults in the UK with T2DM

Diabetes prevention studies
Lifestyle interventions- do they screen for ED?

Binge eating disorder (1.2-14% prevalence) and **night eating syndrome** (4-9% prevalence) most common eating disorder behaviours [1,3,4]

Overweight women with T2DM: 21% prevalence of BED[5]

no longitudinal studies on ED in T2

1 Herpertz et al, Int J Eat Disord 2000; 2 Nieto-Martinez R et al, Curr Diab Rep 2017;
3 Abbot S et al, J Eat Disord 2018, 4 Nicolau J et al, Acta Diabetol 2015; 5 Kenardy J, Eating Behav 2001

Type 2 Diabetes and Eating Disorders

- Up to 10–40% of patients with T2D meet diagnostic criteria for an eating disorder; binge eating disorder is the most common (Raevuori et al., 2015)
- Anorexia nervosa is associated with a lower risk of type 2 diabetes (Nieto-Martinez et al., 2017).
- Up to 40% of patients with BED are reported to have a BMI in the clinically obese range of weight classification (Kornstein et al., 2016) which impacts metabolic control (Pivarunas et al., 2015)

Type 2 Diabetes and Eating Disorders

- The bingeing that people experience in bulimia nervosa and binge eating disorder often involves a high carbohydrate content (Lourenco et al., 2008; Allison & Timmerman, 2007)
- Just one episode of binge eating has been found to reduce insulin sensitivity by 28% (Parry et al, 2017)
- Regular binge eating is correlated with less optimal blood glucose (Kenardy et al., 2001)
- Risk for type 2 diabetes in eating disorders may not always be thought about, and, we need to consider the experience of binge eating in type 2 diabetes

Type 2 diabetes treatment increasing risk for disordered eating /eating disorders

- Very low calorie diets
- Stigma – lifestyle interventions
- Hypoglycaemia/ binge eating trigger
- Perfectionism
- Ask people about past history of eating disorder

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2023: creating experience and evidence base UK

STEADY- Safe management of people with Type 1 diabetes and EAting Disorders studY

Outpatient based intervention (moderately ill)

NIHR Clinician Scientist Fellowship

NIHR | National Institute for Health Research

London-T1DE - Pilot project to develop a service for people with Type 1 diabetes and eating disorders in London, who are severely ill

NHS England

Prof Khalida Ismail

Dr Helen Partridge

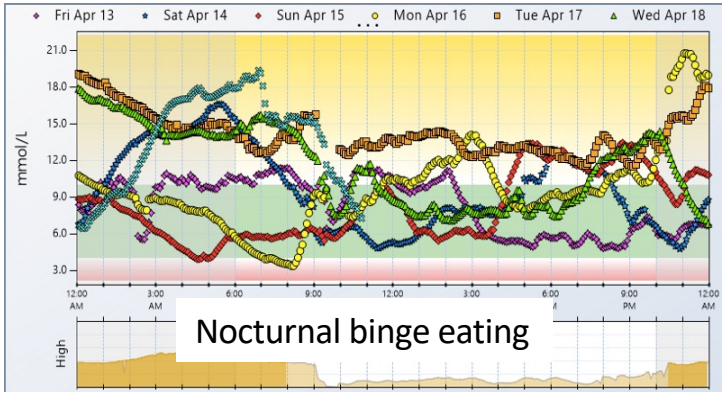
ComPASSION- T1DE Pilot in Wessex

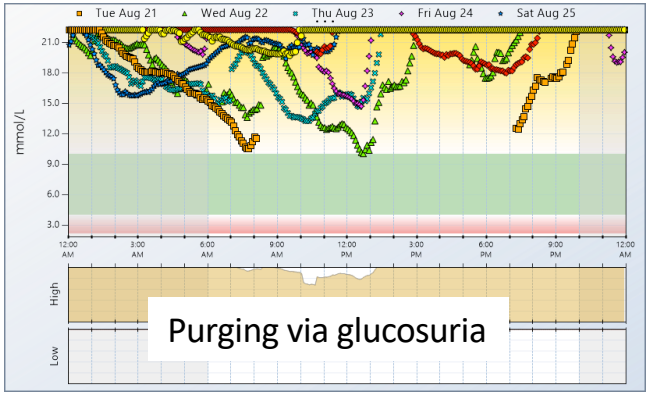
How can you, as a diabetologist find out if your patient struggles with disordered eating/ eating disorder?

- Ask- body image, weight concerns
- Indirect signs in CGMS traces
- Barriers to taking insulin- explore with your patient
- Screening questionnaire
- Consider other mental health comorbidity
- ….

Visualizing eating disorder on a glucose monitoring trace/ person with type 1 diabetes

- Binge eating at night causing extreme BG rise
- Purging by running BG high (shedding water and glucose via kidneys, katabolic state with high ketones)





STEADY

Rama Chandran S, Zaremba N, Harrison A, Choudhary P, Cheah Y, Allan J, Debong F, Reid F, Treasure J, Hopkins D, Ismail K and Stadler M manuscript under review

DEPS-R

Diabetes eating problem survey- revised

Diabetes Eating Problem Survey (Revised) (DEPS-R)©

		Never	Rarely	Sometimes	Often	Usually	Always
1	Losing weight is an important goal to me	0	1	2	3	4	5
2	I skip meals and/or snacks	0	1	2	3	4	5
3	Other people have told me that my eating is out of control	0	1	2	3	4	5
4	When I overeat, I don't take enough insulin to cover the food	0	1	2	3	4	5
5	I eat more when I am alone than when I am with others	0	1	2	3	4	5
6	I feel that it's difficult to lose weight and control my diabetes at the same time	0	1	2	3	4	5
7	I avoid checking my blood sugar when I feel like it is out of range	0	1	2	3	4	5
8	I make myself vomit	0	1	2	3	4	5
9	I try to keep my blood sugar high so that I will lose weight	0	1	2	3	4	5
10	I try to eat to the point of spilling ketones in my urine	0	1	2	3	4	5
11	I feel fat when I take all of my insulin	0	1	2	3	4	5
12	Other people tell me to take better care of my diabetes	0	1	2	3	4	5
13	After I overeat, I skip my next insulin dose	0	1	2	3	4	5
14	I feel that my eating is out of control	0	1	2	3	4	5
15	I alternate between eating very little and eating huge amounts	0	1	2	3	4	5
16	I would rather be thin than to have good control of my diabetes	0	1	2	3	4	5

Markowitz JT, Butler DA, Volkening LK, Antisdel JE, Anderson BJ, Laffel LM. Brief screening tool for disordered eating in diabetes: internal consistency and external validity in a contemporary sample of pediatric patients with type 1 diabetes. Diabetes Care. 2010; 33: 495-500.

Screening Tools: EDEQ

- Eating Disorder Examination Questionnaire (Fairburn & Beglin, 1994): 28 item scale, last 28 days, 0-6 likert scale, plus behavioural frequency items
- Age 14+
- Short forms available
- Global score, restraint, weight concern, shape concern and eating concern subscales
- Community norms available and clinical cut-off is ≥ 4

https://www.corc.uk.net/media/1273/ede-q_quesionnaire.pdf

How can you, as a diabetologist, support/ treat your patient who struggles with disordered eating/ eating disorder?

Clinical risk in the real world during consultation

- Patient arrives at clinic with ketones 3mmols+
- How might they feel when asked to inject insulin to prevent DKA?
- How do you build a relationship when asking them to inject insulin, the thing they feel most threatened by?
- Do they have the physical/mental capacity to decide NOT to inject insulin?
- How helpful is a consultation/ or therapy session when high blood glucose and ketones are likely to impair cognitive function?
- Not taking a drug you need for life- a form of self-harm/ slow suicide- how high is their acute suicidality risk?

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T1DE – clinical learning

…collaborate- you can't do it on your own.

People with T1DE need MDT approach with **combined diabetes/physician AND mental health** expertise to keep them safe….

…**think outside the box**, flexibility, small achievable goals; involve other resources in the community.

Diabetes and eating disorders – clinical learning

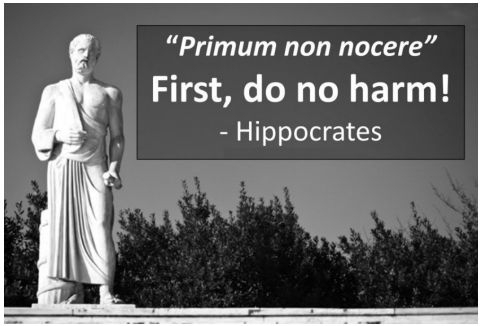
… don’t give up too early!

Recovery can take a **long time** and **high intensity input**….

…**relapse is part of recovery**, as diabetes remains, even if the disordered eating is ‘in recovery.

T1DE – clinical learning

…keep them safe.
… don’t make them worse.



People with T1DE are at **high risk for acute diabetes complications** as well as chronic diabetes complications

Too rapid **re-insulinisation** can deteriorate diabetic **neuropathy and retinopathy** and be too **challenging psychologically**

Slow steps!

Slow insulin titration in an inpatient with anorexia nervosa, insulin omission and type 1 diabetes

target: fit for dental surgery; weight gain

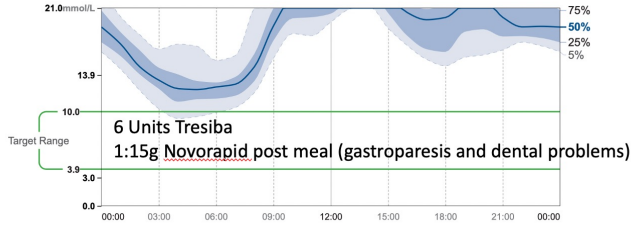
September 2021

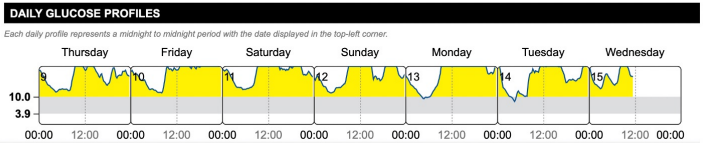
21 yrs female; BMI 12.3/m2; HbA1c 13.9%

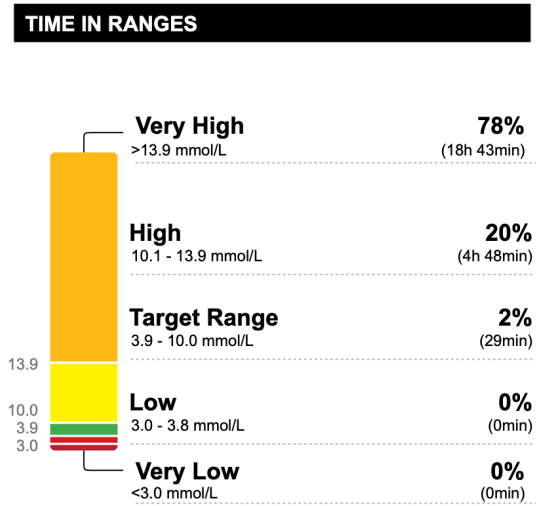
9 September 2021 - 15 September 2021	**7 Days**
% Time Sensor is Active	**96%**

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges	**Targets** % of Readings (Time/Day)
Target Range 3.9-10.0 mmol/L	Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
Below 3.0 mmol/L	Less than 1% (14min)
Above 10.0 mmol/L	Less than 25% (6h)
Above 13.9 mmol/L	Less than 5% (1h 12min)
Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.	

Average Glucose **18.6** mmol/L







Degludec 6 Units

Insulin aspart 1:15g post meal

Slow insulin titration in an inpatient with anorexia nervosa, insulin omission and type 1 diabetes

GLUCOSE STATISTICS AND TARGETS

November 2021

7 Days
92%

Ranges And Targets For	Type 1 or Type 2 Diabetes
Glucose Ranges Target Range 3.9-10.0 mmol/L	**Targets** % of Readings (Time/Day) Greater than 70% (16h 48min)
Below 3.9 mmol/L	Less than 4% (58min)
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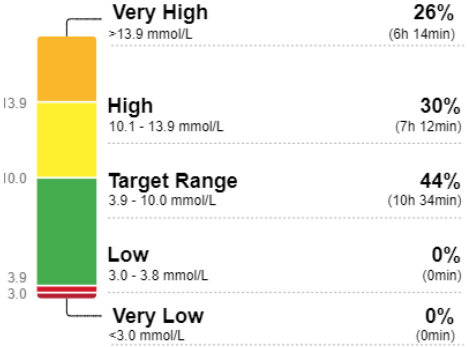
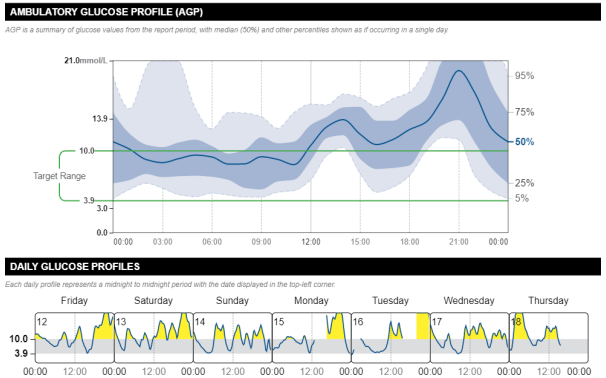
Each 5% increase in time in range (3.9-10.0 mmol/L) is clinically beneficial.	

Average Glucose 11.4 mmol/L

Glucose Management Indicator (GMI) 8.2% or 66 mmol/mol

TIME IN RANGES





Degludec 9 Units
Insulin aspart 1:10g post meal
1: 10g for snacks

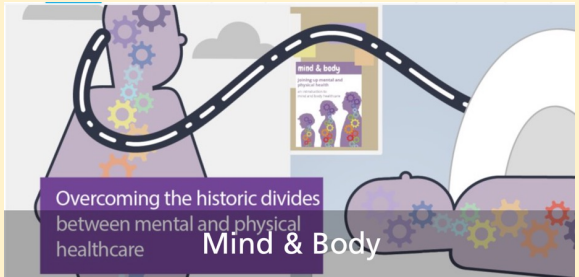
Conclusions

Multidisciplinary working between diabetology and mental health is the ONLY approach to address the comorbid eating disorder/ disordered eating.

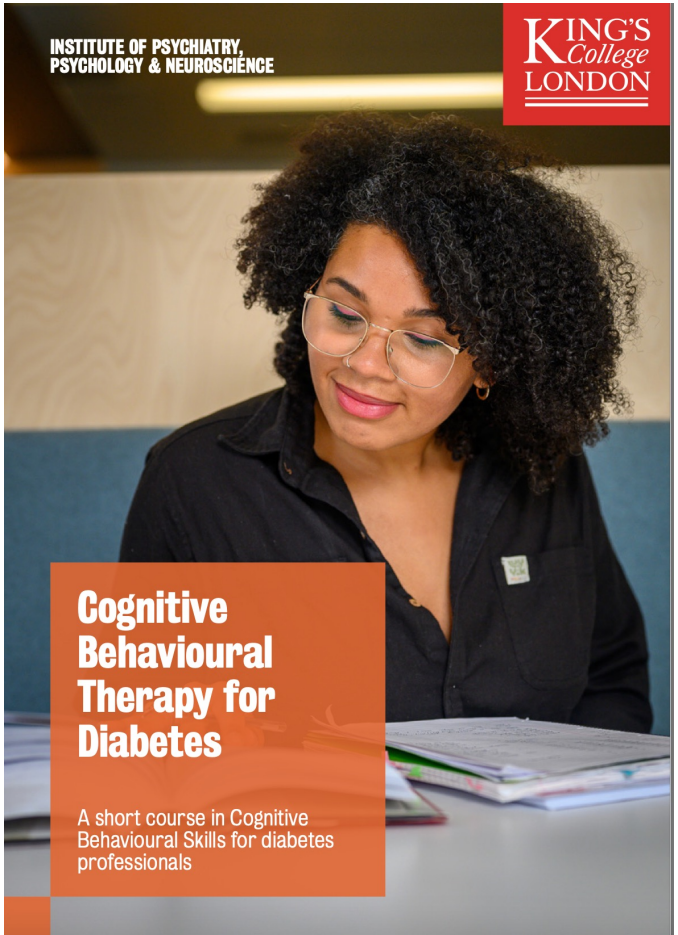
There is a wide spectrum of phenotypes and clinical severity of eating disorders/ disordered eating in type 1 and in type 2 diabetes.

Tailored treatments and pathways are currently being developed.

Be mindful of high psychological and physical comorbidity in this group.



Diabetes CBT short course



Modules

Module 1

Introducing CBT and diabetes

CBT basic skills, including building a five areas formulation and supporting diabetes distress

CBT for diabetes specific problems: fear of hypoglycaemia

CBT for disordered eating in diabetes: fear of insulin as weight gain

Entry criteria

- A pass or higher in an undergraduate degree from a science cognate area such as nursing, medicine, psychology or biological sciences
- Successful completion of the pre-requisite sister module, Cognitive Behavioural Therapy Principles for Diabetes, or evidence of an alternative Introductory module on Cognitive Behavioural Therapy (for Skills-Based Learning from Practice)

VOICE OF THE ACADEMIC

'This course will build your skills and confidence in supporting the mental health of people with diabetes.'

Professor Khalida Ismail, Consultant Liaison Psychiatrist in Diabetes

Cognitive Behavioural Therapy for Diabetes module overview

Lead by Dr Amy Harrison and Professor Khalida Ismail, Cognitive Behavioural Therapy for Diabetes Module 1 is a six-week short course delivering practical, intensive, and detailed training to provide knowledge and skills in a diabetes-specific cognitive behavioural therapy (CBT) model and its applications in clinical practice.

This course will be delivered online using the Keats platform, allowing you the flexibility to fit study around personal and professional commitments. Teaching content will be in the form of videos, audio files and written information that you will engage with in your own time, and the skills will be implemented in the weekly online teaching sessions on Tuesdays 15.15 – 17.30 (GMT).

We are planning to deliver future modules with credits towards a Post Graduate Certificate in Cognitive Behavioural Therapy for Diabetes.

For more information and course enquiries please email deo@kcl.ac.uk

This leaflet was printed in the Spring of 2023. Although it was up-to-date at the time it was produced, please make sure you check our website (kcl.ac.uk/ioppn) or contact us directly for the very latest information before you commit yourself to any of our courses.

At a glance

Fees and course dates £

Fees:
Module 1: £1431
Module 2: TBC

Delivery:
Online

Dates:
Module 1: September 2023
Module 2: TBC

Online teaching: Tuesdays 15:15 – 17:30 (GMT)

More online

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@KHPDEO

All party parliamentary working group T1DE

JDRF IMPROVING LIVES. CURING TYPE 1 DIABETES.

Knowledge & support | About JDRF | How to help | News & events

New Parliamentary inquiry into type 1 diabetes and eating disorders launched

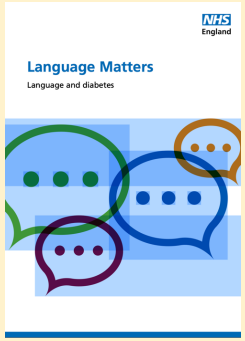
Sir George Howarth MP and Rt. Hon Theresa May MP have launched a new inquiry into eating disorders in type 1 diabetes, also known as T1DE, supported by JDRF as the secretariat.

20 June 2022

- Several T1DE team members have given evidence
- Report publication imminent
- 5 new pilot T1DE sites:

  Coventry and Warwickshire;
  Leicester; Humber and North Yorkshire;
  Norfolk and Waveney; Cheshire and Merseyside

Take home messages



- Avoid unnescessary focus on eating/ body weight in the consultation – not weighing if not needed (unless severely low-weight)!
- Ask about both the physical AND the mental well-being
- Make contact and work with your local eating disorders service (in-and outpatients).

Thank you for your attention

Questions?

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Please email us, if you would like to take part in the Delphi survey for T1DE phenotypes: Steady-project@kcl.ac.uk