DIABETES & EATING DISORDERS
NOT JUST “DIABULIMIA”

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OVERVIEW: DIABETES + ED
- Eating disorders and Diabetes Statistics
- Medical concerns as they relate to case study examples:
  - 1) Anorexia nervosa + T1 Diabetes
  - 2) OSFED + T1 Diabetes
  - 3) Bulimia nervosa + T1 Diabetes
  - 4) Binge eating + T2 Diabetes
  - 5) ED-MT1 “diabulimia”

- Treatment/recovery process
- Practical applications

EATING DISORDERS + DIABETES
- ED behaviors seen in 8% of T1DM vs. 1% of peers without DM
- Increased risk of disturbed eating behavior in girls with T1DM as young as 9 yrs old.
- 52.4% of females with Type 1 diabetes have some form of disordered eating or weight control behavior
- 36% reported intentional omission of insulin.

- Strong association between Type 2 Diabetes and clinically significant Binge Eating.
WHY ED AND DIABETES?

- Emphasis on food and dietary restraint
- Weight gain/higher BMI, result from intensive insulin therapy
- Temptation factor - easy availability of deliberate insulin omission to control weight
- Effect of diabetes on self-concept, body image, and family interactions
- Family dynamics involving autonomy and independence concerning diabetes self-management
- Type 2 diabetes: Prevalence rate among Binge Eating Disorder with obesity 3.3-5.5%  

Medical comorbidities and medical complications associated with binge eating disorder. Int J Eat Dis 49:3

MEDICAL COMPLICATIONS

- Long list of medical problems associated with eating disorders
- Most are reversible and treatable
- Some are associated with permanent harm
- In anorexia and ARFID a direct result of starvation and weight loss
- In bulimia directly correlated with mode and frequency of purging

Mehler, Phillip (2010) Eating Disorders a guide to medical care and complications

MEDICAL COMPLICATIONS OF ANOREXIA

- Cardiovascular
  - Bradycardia & hypotension
  - Mitral valve prolapse
  - Sudden death - arrhythmia
  - Refeeding syndrome
  - Echo changes Pericardial effusions

- Gastrointestinal
  - Constipation
  - Refeeding pancreatitis
  - Acute gastric dilatation
  - Delayed gastric emptying
  - Hepatitis
  - Dysphagia
  - SMA syndrome

- Endocrine and Metabolic
  - Amenorrhea
  - Unintended pregnancy & miscarriages
  - Osteoporosis
  - Thyroid Abnormalities
  - Hypercortisolism
  - Hypoglycemia
  - Neurogenic diabetes insipidus
  - Hypophosphatemia

Medical complications of Anorexia Nervosa and Bulimia – Tour De Force. Philip Mehler, MD.

ACUS annual symposium 2017
MEDICAL COMPLICATIONS OF ANOREXIA CONT.

- **Hematologic**
  - Pancytopenia
  - Decreased sedimentation rate

- **Neurologic**
  - Cerebral atrophy

- **Ophthalmic**
  - Lagophthalmos

- **Auditory**
  - Patulous
  - Eustachian tube dysfunction

- **Pulmonary**
  - Aspiration pneumonia
  - Respiratory failure
  - Spontaneous pneumothorax
  - Emphysema

- **Dermatologic**
  - Dry skin
  - Alopecia
  - Lanugo hair
  - Starvation-associated puritis
  - Acrocyanosis

MEDICAL COMPLICATIONS OF BULIMIA

- **Cardiovascular**
  - Arrhythmias
  - Diet pill toxicity
  - Emetene cardiomyopathy
  - Palpitations

- **Gastrointestinal**
  - Dental erosion and caries
  - Parotid gland swelling
  - Esophageal rupture
  - Gastroesophageal reflux (GERD)
  - Constipation due to laxative abuse
  - Constipation due to laxative abuse
  - Rectal prolapse
  - Mallory-Weiss tear

- **Endocrine and Metabolic**
  - Irregular menses
  - Mineralocorticoid excess
  - Diabulimia
  - Hypokalemia
  - Dehydration

- **ENT**
  - Epistaxis
  - Pharyngitis

- **Dermatologic**
  - Russet's sign
  - Edema

- **Metabolic Acidosis**
  - Pseudo Bartter's syndrome

MEDICAL COMPLICATIONS OF BULIMIA CONT.

- **Endocrine & Metabolic**
  - Irregular menses
  - Mineralocorticoid excess
  - "Diabulimia"
  - Hypokalemia
  - Dehydration

- **Ophthalmic**
  - Scleral hemorrhage

- **Pulmonary**
  - Aspiration pneumonia
  - Pneumomediastinum

- **ENT**
  - Epistaxis
  - Pharyngitis

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- **Metabolic Acidosis**
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ED SCREENING TOOLS FOR DIABETES PATIENTS

• Diabetes and Eating Problem Survey – Revised (DEPS-R)
• SCOFF
• Eating Attitudes Test (EAT-26)

DEPS-R

16 questions 0-5 Likert scale, can complete in <10 min

Some examples of questions specifically related to diabetes:

• I feel fat when I take all of my insulin.
• Other people tell me to take better care of my diabetes.
• After I overeat, I skip my next insulin dose.
• I keep my blood sugar high in order to loose weight.


SCOFF

• Do you make yourself Sick because you feel uncomfortably full?
• Do you worry you have lost Control over how much you eat?
• Have you recently lost more than One stone (7.7 kg, about 15 lbs) in a 3 month period?
• Do you believe yourself to be Fat when others say you are too thin?
• Would you say that Food dominates your life?

*One point for every “yes;” a score of ≥2 indicates a likely case of anorexia nervosa or bulimia
EATING ATTITUDES TEST (EAT-26)

Part B: Please check a response for each of the following statements:
1. Am terrified about being overweight.
2. Avoid eating when I am hungry.
3. Find myself preoccupied with food.
4. Have gone on eating binges where I feel that I may not be able to stop.
5. Cut my food into small pieces.
6. Aware of the calorie content of foods that I eat.
7. Particularly avoid food with a high carbohydrate content (i.e. bread, rice, potatoes, etc.
8. Feel that others would prefer if I ate more.
9. Vomit after I have eaten.
10. Feel extremely guilty after eating.
11. Am preoccupied with a desire to be thinner.

ANOREXIA NERVOSA + DM
RESTRICTING TYPE WITH EXCESSIVE EXERCISE

- 46 yo female
- HT: 5 ft. 8 in.
- WT: 129
- BMI 19.6 IBW 92%
- Type 1 Diabetes x 44 years - “brittle”
  - “always worked out”
  - “always cognizant of what I’m eating”

ED SCREENING TOOLS
FOR DIABETES PATIENTS

- DEPS-R = score 16
  - Diabetes and Eating Problem Survey- Revised (score >20 clinically significant)
- SCOFF = 2 (yes)
CO-EXISTING CONDITIONS

- Major Depressive Disorder
- Generalized Anxiety Disorder
- Obsessive Compulsive Disorder
- Crest syndrome/scleroderma
- Colitis, autoimmune
- Hypothyroidism
- Hypothalamic amenorrhea

MEDICATIONS

- Insulin, Novolog, insulin pump
- Synthroid .88 mg
- Simvastatin 20 mg
- Accupril 30mg
- Cymbalta 90mg
- Remeron 45mg
- Clonidine .2mg
- Deplin 30 mg
- Lo-loestrin
- Iron

VITAL SIGNS

- BP 166/80, 150/82
- HR 73, 77
- T 98.5
- EKG - normal sinus HR 63
- QT/QTc 418/423
LABS

- A1C 6.5%
- Glucose 55
- Potassium 3.5
- ALKP 39
- RBC 3.6
- HGB 11.8
- HCT 34.1

REFEEDING SYNDROME

- First observed and described after World War II when victims of starvation were noted to experience cardiac or neurologic dysfunction or both after being reintroduced to food.
- Electrolyte disturbances (primarily decreased levels of phosphorus, magnesium, or potassium) occur immediately upon the rapid initiation of refeeding—commonly within 12 or 72 hours—and can continue for the next 2 to 7 days.
- Cardiac complications can develop within the first week, often within the first 24 to 48 hours.3

Yantis M, Velander R. How to recognize and respond to refeeding syndrome. Nursing 2008; 38(S):34-39
CRITERIA FROM THE GUIDELINES OF THE NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE FOR IDENTIFYING PATIENTS AT HIGH RISK OF REFEEDING PROBLEMS

• The patient has one or more of the following:
  • Body mass index (kg/m²) <16
  • Weight loss >15% in the past three to six months
  • Little or no nutritional intake for >10 days
  • Low levels of potassium, phosphate, or magnesium before feeding

• Or the patient has two or more of the following:
  • Body mass index <18.5
  • Weight loss >10% in the past three to six months
  • Little or no nutritional intake for >5 days
  • History of alcohol misuse or drugs, including insulin, chemotherapy, antidepressants, or diuretics

HOW TO AVOID RE-FEEDING SYNDROME?

• Recognize the “patient at risk”
• Carefully test for and correct electrolyte abnormalities before initiating any nutritional support.
• Judiciously restore circulatory volume, closely monitor vitals and exam. Never administer rapid IV fluids
• Increase caloric delivery slowly
• Carefully monitor the electrolytes especially over the 1st week
  • Including: Phosphorous, Potassium and Magnesium

POTENTIAL COMPLICATIONS AND TREATMENT

• Electrolyte abnormalities
  • Blood chemistry daily or every other day until stable, replace low
• Fluid shift
• Edema
  • Lung and edema checks, compression hose, elevate feet, medication
• Vital sign changes [HR]
  • Monitor vital signs daily
• Sluggish GI tract
  • Dietary low and slow (not as low as before)
  • Fiber and hydration
HYPOGLYCEMIA IN ANOREXIA

- Dietary restriction accompanied by weight loss and excessive exercise lead to depleted hepatic glycogen reserves and disruption of gluconeogenesis substrates and abnormalities of glucose metabolism.
- Milder cases of anorexia hypoglycemia rarely causes symptoms.
- “Documented hypoglycemia should simply imply an urgent need for weight restoration.”
DIABETES ALIBI

- Restriction
  - High blood sugar
  - "Someone with diabetes shouldn't eat that!"
  - Limited carbohydrates
  - No desserts

- Binge eating
  - Triggered by low blood sugar

AFTER 6 WEEKS

- Eating Disorder thoughts decreased from 80% to 20%

- A1c 6.7% (6.5 on admit)
  - Minimal hypoglycemia
OSFED + DM

- 19 yo female
- returned from serving a volunteer mission because of ED behaviors and wt loss
- Some orthorexia type behaviors - “Fixation on righteous eating”
- Restriction and avoiding carbs
- Type 1 Diabetes x 7 yrs.
  - Insulin pump + CGM

OSFED + DM

- Ht: 65.5
- WT: 114
- BMI: 18.8
- LMP: months ago
- DEPS-R = 31
- SCOFF = 3

MEDICATIONS

- Prozac - OCD
- Risperdol - thought disorder
- Vitamin D
- Insulin – insulin pump + CGM
LABS

- A1c 7.1%
- Glucose 237
- Phosphate 4.8
- Sodium 145
- K+ 5.2
- RBC 3.9
- HDL cholesterol 65

VITAL SIGNS

- BP: 96/56
- HR: 41
- T: 97.7
- EKG
  - HR 36
  - QT/QTC 454/412
  - While sleeping her heart rate dropped to 28

BRADYCARDIA
BRADYCARDIA

AFTER 4 MONTHS

- Eating Disorder thoughts decreased from 90% to 60%
- A1c = 7% (7.1% on admit)
- Vital signs stable
- Menses returned
- Intuitive Eating

BULIMIA NERVOSA + DM

- 30 yo female who is a medical professional
- HT: 5 ft. 2 in.
- WT: 174
- BMI 32.4
- Type 1 Diabetes x 23 years, insulin pump + CGM
  - A1c = 5.8%
  - ED thoughts 100% of the time
CO-EXISTING CONDITIONS

- Anxiety
- Depression – post partum exacerbation
- Self-harm
  - More common with diabetes?
  - Suicide ideation

MEDICATIONS

- Abilify – depression
- Vistaril – anxiety
- Klonopin prn – panic attacks
- Ambien q HS for insomnia
- Lisinopril 10 mg “kidney protection”
- Synthroid 150 mcg po q day for hypothyroidism
- HCTZ 25 mg po q am – blood pressure?
- Humalog insulin via pump

LABS

- Sodium 127 (135-143)
- Chloride 97 (99-110)
- CO2 18
- Glucose 325
- TSH 0.05 (4 weeks later = .98)
- Vitamin D 27
PSEUDO-BARTTER’S SYNDROME/
SECONDARY HYPERALDOSTERONISM

Electrolyte Abnormalities in Severe Eating Disorders.
ACUTE annual symposium 2017.

COMPLICATIONS OF PSEUDO-
BARTTER’S

- EDEMA PREVENTION
  - Spironolactone

AFTER 3 MONTHS OF TREATMENT

- Eating disorder thoughts decreased from 100% to 30%
- A1C 6.2% (was 5.8%)
- Left treatment being motivated to want to expand her family and be a healthy mom.
**BINGE EATING + TYPE 2 DIABETES**

- 40 yr old female with Binge Eating Disorder
- Military professional
- Was having a difficult time managing diabetes because of eating disorder.
- ED thoughts 90%
- Comparing food. Wants to eat food that other pt’s leave behind. “licking lids” “licking plate clean”, “eats fast”, abusing condiments - eating ketchup out of packages, butter tabs

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**VITAL SIGNS/LABS**

- BP 131/73
- HR 106
- WT 246 lbs.
- BMI 39.5
- A1c 8.6%
- ALT 132
- AST 76
- Triglycerides 263
- VLDL 53

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**MEDICATIONS**

- Gabapentin – neuropathy
- Lisinopril – hypertension
- Simvastatin – hypercholesterolemia
- Metformin – diabetes
- Lantus/novolog insulin – diabetes
- Abilify – thought disorder
- Fluoxetine – depression
- Hydroxyzine – anxiety/insomnia prn
SCREENING TOOLS
BINGE EATING + TYPE 2 DIABETES

- DEPS-R = 39
- SCOFF score = 3

AFTER 3 MONTHS OF TREATMENT

- A1c = 7.2%
- Liver enzymes WNL
- WT = 237 (lost 9 lbs.)
- ED thoughts improved from 90% to 30% of the time.
- “I actually left some food on my plate because I was full!”

RECOVERY DIRECTED EATING

<table>
<thead>
<tr>
<th>Highly Structured Eating</th>
<th>Self Plating/Family Style Eating</th>
<th>Intuitive Eating</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD determines appropriate calorie level</td>
<td>RD teaches meal guidelines - CFC uses plate method - i.e. entree/side dishes</td>
<td>Client listens to and learns to honor hunger/satiety cues</td>
</tr>
<tr>
<td>RD determines necessity of weight restoration</td>
<td>Client chooses side options - Later client chooses among entree options - learning to honor craving/preference</td>
<td>Client learns to eat appropriately when cues may or may not be present</td>
</tr>
<tr>
<td>Eat designated meal plan or drink equivalent Boost replacement</td>
<td>Eat or drink Boost replacement</td>
<td></td>
</tr>
</tbody>
</table>
RECOVERY DIRECTED EATING

What the Client Learns

Highly Structured Eating
- Trust the dietician
- Challenge the ED rules/beliefs about food
- Brain and body are renourished & healed

Self Plating/Family Style Eating
- Take increased control
- Learn to challenge increasing ED voice
- Learn the amount of food it takes to maintain weight
- Increase variety/moderation
- Determine emotional vs physical hunger

Intuitive Eating
- Trust hunger/satiety cues
- Honor cues
- Challenge ED increased urges to restrict
- Learn how emotions affect hunger/satiety cues
- Take increased control
- Learn how emotions affect hunger/satiety cues
- Increase variety/moderation
- Determine emotional vs physical hunger

Timing of Teaching Intuitive Eating Principles

Highly Structured Eating
- Reject the diet mentality
- Make peace with food
- Challenge the food police
- Respect your body

Self Plating/Family Style Eating
- Discover the satisfaction factor
- Respect your fullness
- Honor your feelings without using food (or restricting food)

Intuitive Eating
- Honor your hunger
- Honor your health with gentle nutrition

DIETARY GOALS WITH ED + DIABETES

- Start highly structured and then loosen as glucose is managed and ED urges improve
- Teach Balance
  - DM needs vigilance, label reading, CHO counting
  - ED recovery needs flexibility
- Emphasize Flexibility
  - ED recovery needs variety and challenge to fear foods
  - DM can tolerate carb changes if worked into meal plan or covered by insulin
**EXERCISE VS INTUITIVE MOVEMENT**

- Exercise as a purging method
- When exercise becomes an unhealthy coping mechanism
- Exercise addiction
- Intuitive/Harmonious movement
- Contracts for Exercise
  - Pre-exercise snack
  - Post-exercise snack
  - Moderate intensity and duration

**ED-DMT1 “DIABULIMIA”**

- 15 yr old, high school student in AP and honors classes
- Diagnosed with diabetes at 4 years old.
- ED behaviors started at 12 years old with dieting and restricting calories. Started using some diet pills and or laxatives a few times/week. Usually binged after school, but would not take insulin for food eaten.
- Insulin omission:
  - Humalog was taking 1-2 times daily
  - Lantus was taking 36 units daily about 3 times per week

**ED-DMT1 “DIABULIMIA”**

- DEPS-R score = 69
- ED thoughts 50% of the time
VITAL SIGNS

- WT: 114
- BMI: 20.5
- BP: 109/71
- HR: 110
- EKG: WNL

MEDICATIONS

- Prozac 20 mg po q day for depression
- Gabapentin 100mg BID for anxiety
- Humalog insulin
- Lantus insulin

LABS

- A1c 11.7%
- Glucose 419
- Co2 15
- Sodium 134
- AST 88, ALT 66
- Potassium 3.4
- Vitamin D 9.4
EATING DISORDERS AND DIABETES MODEL

AFTER 2.5 MONTHS

Labs:
- AST 25 (6-37)
- ALT 39 (12-65)
- Vitamin D 38.7 (30 - 149)
- A1c 9.7% (11.7% on admit)
- ED thoughts reduced from 50 to 25% of the time

FOR FAMILY AND FRIENDS

PRACTICAL APPLICATIONS

- Know warning signs of ED and symptoms of DKA
- Refrain from fear tactics or shaming
- End “body talk”
- Encourage flexible eating

Ann Goebel-Fabbri (2017) Injecting Hope
Prevention and recovery from eating disorders in diabetes
FOR MENTAL HEALTH PROVIDERS
PRACTICAL APPLICATIONS

- Understand and “speak diabetes”
  - What it is and how it is currently treated, insulin types, pumps, CGMs
  - Know s/s of low and high BG
  - Understand risks of insulin restriction and signs of DKA
  - Be willing to learn
- Collaborate with diabetes team – they can teach you
- Gather diabetes history
  - Diagnosis, family’s response, relationship with providers
  - Expectations, targets for glucose and approach to food.
- Adapt your standard approach to eating disorders
  - Diabetes specific concerns need to be integrated into treatment
  - Perfectionism: diabetes management, food, weight
  - Comfort level - burnout

DIABETES PROVIDERS
PRACTICAL APPLICATIONS

- Create a nonjudgmental treatment relationship.
- Language:
  - Management vs. control
  - check/value vs. test (glucose or A1C)
  - like a compass not a report card
  - High/low or in target vs. good/bad
  - Avoid labeling food as good or bad
  - Avoid suggestions or comments that diminish the complexity and difficulty of having both DM and ED
    - “just eat”
    - Avoid labels “non-compliant”

Ann Goebel-Fabbri 2017  Injecting Hope
Prevention and Recovery from Eating Disorders in Type 1 Diabetes

- Teach symptoms of DKA
- Take the fear of weight gain seriously
- Help cope with edema
- Gradual decreases in A1C
- Focus on where the pt. feels ready
- Celebrate small successes

Ann Goebel-Fabbri 2017  Injecting Hope
Prevention and Recovery from Eating Disorders in Type 1 Diabetes
REFERENCES

• Ann Goebel-Fabbri (2017) Prevention and Recovery from Eating Disorders in Type 1 Diabetes


• International Journal of Eating Disorders
  March 2016, 49:3
  (Invited special issue: medical issues in eating disorders)

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