Eating Disorders in Children and Adolescents

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“At your age, Tommy, a boy’s body goes through changes that are not always easy to understand.”
Eating Disorders in Children and Adolescents

Objectives:

- Discuss eating disorders as described *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5)
- List signs and symptoms of eating disorders in children and adolescents
Eating Disorders in Children and Adolescents

Objectives:

- Describe the potential medical complications of eating disorders in children and adolescents
- Plan the evaluation and management of the children and adolescents with eating disorders
Stephanie is a 17 10/12 year-old high school senior who presents for her yearly physical examination prior to leaving for college. Her mother accompanies her to the exam room, and appears somewhat anxious.

Stephanie says that she feels fine, “great even.” On review of systems, a different picture of Stephanie emerges.
She started losing weight 4 months ago “to be healthy” and to “look better.” She feels cold frequently and has noted her hair thinning. She occasionally has a headache. Her last menstrual period was four months ago although her menses had previously occurred every 30 days. She denies any cardio-respiratory symptoms.

She runs five miles a day and does 250 abdominal crunches in her room after dinner. She states, “I’m eating three meals a day.”
Her mother interrupts in a confrontational manner, “Stephanie has been dieting for the past four months. My husband and I are very worried about her.” You note that Stephanie has lost 14 kg from her weight of 58 kg one year ago. Her height has remained the same. She answers defensively, “I feel fine. I like the way I look now. I just don’t like all those dishes my mother cooks. They are so full of oil and butter. I want to eat healthy.”

Stephanie is wearing baggy clothes and appears quite thin.
Disordered Eating Attitudes and Behaviors in Teenage Girls (Jones et.al, 2001)

- 47% of girls feel unhappy about their weight
- 27% of 12-18 year old girls have disordered eating attitudes and behaviors
- 23% of adolescent girls are dieting to lose weight
- 19% of girls <15 years binge eat and purge
- 26% of girls ≥ 15 years binge eat and purge
- 8.2% self-induce vomiting
- 2.4% use diet pills
- 0.6% use diuretics
- 1.1% use laxatives
Disordered Eating Behaviors

- 46.0% trying to lose weight
- In the preceding 30 days:
  - 12.2% had not eaten for ≥24 hours to lose weight or to keep from gaining weight
  - 5.1% had taken diet pills, powders, or liquids without a doctor’s advice to lose weight or to keep from gaining weight
  - 4.3% had vomited or taken laxatives to lose weight or to keep from gaining weight

Youth Risk Behavior Survey, 2011
Eating Disorders in Adolescents

- Anorexia Nervosa
- Bulimia Nervosa
- Binge Eating Disorder
- Other Specified Feeding or Eating Disorder
- Unspecified Feeding or Eating Disorder
Eating Disorders Prevalence

- **Anorexia Nervosa:**
  - Prevalence: 0.3 – 0.5%; Up to 2% in some estimates
  - Incidence highest in 15-19 year old females
  - Most begin in adolescence, >90% diagnosed before age 25
  - Peak age mid-adolescence (13-15 years)
  - Gender:
    - 85-90% female
    - 1 in 8 adolescents under 14 with AN are males

_Anorexia nervosa is the third most common chronic illness in adolescent girls, after obesity and asthma._
Eating Disorders Prevalence

- Bulimia Nervosa: 1 – 3% (1-3,000/100k)
  - Prevalence:
    - 1 – 3% (1-3,000/100k)
  - Age:
    - Onset usually in late adolescence or early adulthood, modal age of onset of 18-19 years
  - Gender:
    - 90-95% female

- EDNOS: 0.3 – 0.5% (3-500/100k)
Eating Disorders in Adolescents

Must be differentiated from the following:
- Weight preoccupation
- Food faddism
- Fat phobia
- Finicky eater
Anorexia Nervosa DSM V

- Persistent restriction of energy intake leading to significantly low body weight in context of what is minimally expected for age, sex, developmental trajectory, and physical health.

- Either an intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain even though significantly low weight.
Anorexia Nervosa DSM V

- Disturbance in the way one's body weight or shape is experienced, undue influence of body shape and weight on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight.

- Subtypes:
  - Restricting type
  - Binge-eating/purging type
Bulimia Nervosa DSM V

- Recurrent episodes of binge eating:

- Eating, in a discrete period of time (e.g. within any 2-hour period), an amount of food that is definitely larger than most people would eat during a similar period of time and under similar circumstances.

- A sense of lack of control over eating during the episode (e.g. a feeling that one cannot stop eating or control what or how much one is eating).
Bulimia Nervosa DSM V

- Recurrent inappropriate compensatory behaviors in order to prevent weight gain, such as self-induced vomiting, misuse of laxatives, diuretics, or other medications, fasting, or excessive exercise.
- The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for three months.
- Self-evaluation is unduly influenced by body shape and weight.
- The disturbance does not occur exclusively during episodes of Anorexia Nervosa.
Other Specified Feeding or Eating Disorder (OSFED)

- Behaviors cause clinically significant distress and impairment but do not meet the full criteria for any of the other feeding and eating disorders.

- Atypical Anorexia Nervosa: Weight is within or above the normal range despite significant weight loss.

- Binge Eating Disorder of low frequency and/or limited duration
Other Specified Feeding or Eating Disorder (OSFED)

- Purging Disorder: Recurrent purging behavior to influence weight or shape in the absence of binge eating.

- Night Eating Syndrome:
  - Recurrent episodes of night eating, eating after awakening from sleep, or excessive food consumption after the evening meal.
  - The behavior causes significant distress/impairment.
  - The behavior is not better explained by environmental influences or social norms or by another mental health disorder (e.g. BED).
Unspecified Feeding or Eating Disorder

- Behaviors cause clinically significant distress/impairment of functioning, but do not meet the full criteria of any of the Feeding or Eating Disorder criteria.

- Category may be used by clinicians where a clinician chooses not to specify why criteria are not met, including presentations where there may be insufficient information to make a more specific diagnosis (e.g. in emergency room settings).
Eating Disorders in Children and Adolescents

- Multifactorial etiology
  - Biological
  - Psychological
  - Socio-cultural

- Comorbidities:
  - Anxiety Disorders, Depression, OCD, Substance abuse
  - Medical conditions such as diabetes and cystic fibrosis
Eating Disorder Risk Factors

- Age and Gender
- Early childhood eating problems
- Weight concerns and negative body image
- Competitive athletics
- Dieting
- Slightly overweight or pear-shaped habitus

- Personality traits
- Early puberty
- Chronic illness
- Physical and sexual abuse
- Family history of eating disorders and psychopathology
- Media
“It’s very nice, dear. But why did you draw me so fat?”
NoBODY

I am
Alone.
No BODY loves
me.
I am locked in a lardy Alcatraz!
I want
no
BODY.
It's not an illness, it's my life.
Eating Disorder Red Flags

- Dieting
- Failure to show weight gain or weight loss
- Preoccupation with weight, food, calories, and dieting
- Feeling fat when weight is normal or low
- Resetting weight loss goals
- Wide weight fluctuations

- Fear of gaining weight
- Guilt and shame about eating; unusual behaviors
- Weight determines self-esteem
- Amenorrhea
- Isolation
- Irritability and mood changes
Eating Disorder Presenting Signs and Symptoms

- May occur without presenting signs and symptoms

- Signs and symptoms reflection of:
  - Degree of malnutrition and consequence of nutritional deficiencies
  - Binge eating and inappropriate compensatory behaviors
Eating Disorder Presenting Signs and Symptoms

- **General**
  - Marked weight loss, gain or fluctuations
  - Weight loss, maintenance, or failure to gain weight in developing child/adolescents
  - Weakness
  - Cold intolerance
  - Fatigue or lethargy
  - Dizziness/Syncope
Eating Disorder Presenting Signs and Symptoms

- Eyes, Oral and Dental
  - Subconjunctival hemorrhages
  - Oral Trauma and Lacerations
  - Dental erosions and dental caries
  - Parotid Enlargement
Eating Disorder Presenting Signs and Symptoms

- Cardiorespiratory
  - Chest pain
  - Palpitations
  - Arrythmias
  - Shortness of breath
  - Edema

- Gastrointestinal
  - Epigastric discomfort
  - Early satiety
  - GERD
  - Hematemesis
  - Hemorrhoids or rectal prolapse
  - Bloody diarrhea
  - Constipation
Eating Disorder Presenting Signs and Symptoms

- **Endocrine**
  - Amenorrhea or irregular menses
  - Loss of libido
  - Low bone mineral density and increased stress fracture risk
  - Infertility

- **Neuropsychiatric**
  - Memory loss/Poor concentration
  - Insomnia
  - Depression/Anxiety/Obsessive behavior
  - Self-harm
  - Suicidal ideation/attempts
Biologic Vulnerability
- Genetic, physiologic predisposition

Psychologic Predisposition
- Early experience
- Family influences
- Intrapsychic conflict

Social Climate
- Societal influences and expectations

Pubertal endocrine changes

Ameliorating
- Weight loss

Dieting
- Personality change

Sustaining
- Malnutrition
- Physiologic changes
- Mental changes
Eating Disorder Presenting Signs and Symptoms

- Dermatologic
  - Lanugo hair
  - Hair loss
  - Yellowish discoloration of the skin
  - Russell’s sign
  - Acrocyanosis
  - Poor healing
Eating Disorders Evaluation

- History
- Physical Examination
- Laboratory Tests
- Nutritional Assessment
- +/- Standardized Instruments and Testing
Eating Disorders: History

- Why has the teen/family come for an assessment?
- How does the teen feel about the way he/she looks?
- Is the teen trying to change the way he/she looks?
- How much does the teen want to weigh?
- What was the least and most weights and when?
- How often does the teen weigh himself or herself?
Eating Disorders: History

- Does the teens feelings about his/her body affect mood?
- What methods has the teen used to control weight?
- Does the teen binge
- Are there purging behaviors?
- What are the teens exercise patterns?
- Is there any particular body part the teen is uncomfortable with and why?
Eating Disorders: History

- How much does the disordered eating interfere with the teen’s life?
- How much does the teen worry about eating or weight?
- How much time spent in preparing food, exercising or weighing?
- Dietary History
Eating Disorders: History

- Menstrual History
- Mental Health History
  - Where does the teen go for help/support systems?
  - Engagement and Connectedness vs. Isolation
- Substance Abuse History
- Sexual History
- Family history, including eating problems, perceptions and response to the problem?
Eating Disorders Evaluation

- History
- Review of Systems
- Physical Examination
- Laboratory Tests
- Nutritional Assessment
- +/- Standardized Instruments and Testing
Stephanie’s mother is asked to wait in the reception area during the physical examination. She leaves the office reluctantly.

Stephanie denies vomiting, diarrhea, use of laxatives or diet pills. She tells you that she feels her stomach is “too fat,” and she admits that she would like to be just 2 or 3 pounds lighter. She has never had sexual intercourse and does not use drugs, alcohol, or tobacco.
Eating Disorders Evaluation

- History
- Physical Examination
- Laboratory Tests
- Nutritional Assessment
- +/- Standardized Instruments and Testing
Eating Disorders Evaluation: Physical Examination

- Height
- Weight
- Temperature (<96°F/35.6°C)
- BMI
  - % of Ideal Body Weight
- HR and BP:
  - Bradycardia
  - Orthostasis
  - Hypotension
Eating Disorders Evaluation: Physical Examination

- May be completely normal
- Accentuated bony prominences
- Dull, thinning hair and lanugo
- Yellowish skin
- Systolic murmur
- Breast atrophy
- Scaphoid abdomen often with palpable stool
- Vaginal mucosa may appear unestrogenized
- Cold and bluish extremities
Eating Disorders Evaluation: Physical Examination

- If binge eating and purging:
  - Enlarged salivary glands
  - Linear scars in the anterior tonsillar pillars
  - Gingivitis
  - Subconjunctival hemorrhage
  - Russell’s sign
  - Perimyolysis
Eating Disorders Evaluation

- History
- Physical Examination
- Laboratory Tests
- Nutritional Assessment
- +/- Standardized Instruments and Testing
Eating Disorders Laboratory Features

- Leukopenia
- Anemia
- Thrombocytopenia
- Metabolic alkalosis
- Hypophosphatemia
- Hypokalemia
- Hypomagnesemia
- Hypocalcemia

- Mildly elevated AST, ALT
- Decreased ESR
- Increased cholesterol
- Increased serum carotene and decreased Vit A levels
- Decreased serum zinc and copper
Eating Disorders Laboratory Features

- Normal TSH, Normal or low T4, Low T3, Increased Reverse T3
- Decreased FSH and LH
- Decreased levels of estradiol and testosterone
- Prepubertal pattern of LH release
- Blunted FSH and LH response to GnRH
Eating Disorders Laboratory Features

- Normal or slightly elevated cortisol levels
- Normal or elevated GH levels with decreased somatomedin
- ECG: Bradycardia, Low voltage changes, T-wave inversion and occasional ST segment depression
- Bone demineralization
Eating Disorders: Laboratory Tests

- CBC
- ESR
- Serum Chemistry
- CA, MG, Ph
- LFTs
- Amylase
- Serum albumin and prealbumin level
- T3, T4, TSH
- FSH, LH, Estradiol, Prolactin if with amenorrhea
- PT/PTT
- Serum carotene level
- EKG
- BMD if with amenorrhea > 6 months
Optional Laboratory Tests

• Upper GI series and small bowel series
• Barium enema
• Celiac Screen
• Head CT/MRI
Eating Disorders Evaluation

- History
- Physical Examination
- Laboratory Tests
- **Nutritional Assessment**
- +/- Standardized Instruments and Testing
Eating Disorders Evaluation

• History
• Physical Examination
• Laboratory Tests
• Nutritional Assessment
• +/- Standardized Instruments and Testing
  • Eating Attitudes Test; Eating Disorders Inventory; Eating Disorders Examination Questionnaire; Kid’s Eating Disorders Survey
Eating Disorders Differential Diagnoses

- Thyroid disease
- Malignancies
- Central nervous system pathology
- Inflammatory bowel disease, Celiac disease
- Diabetes mellitus
- HIV disease
- Addison’s disease
- Other chronic illnesses
Avoidant/Restrictive Food Intake Disorder

- Persistent failure to meet appropriate nutritional and/or energy needs associated with one (or more) of the following:
  - Significant loss of weight or failure to achieve expected weight gain or faltering growth
  - Significant nutritional deficiency
  - Dependence on enteral feeding or oral nutritional supplements
  - Marked interference with psychosocial functioning
  - The behavior is not better explained by lack of available food or by an associated culturally sanctioned practice.
Avoidant/Restrictive Food Intake Disorder

- The behavior does not occur exclusively during the course of anorexia nervosa or bulimia nervosa, and there is no evidence of a disturbance in the way one’s body weight or shape is experienced.

- The eating disturbance is not attributed to a medical condition, or better explained by another mental health disorder. When it does occur in the presence of another condition/disorder, the behavior exceeds what is usually associated, and warrants additional clinical attention.
Eating Disorders Treatment Goals

- **Medical**
  - Medical stabilization
  - Early identification, treatment, and prevention, of medical complications
  - Resumption of menses

- **Nutrition**
  - Nutritional rehabilitation and correction of malnutrition
  - Cessation of binge eating and/or purging behaviors
  - Restore meal patterns that promote health and social connections
Eating Disorders Treatment Goals

- Mental Health
  - Cessation of eating disordered ideation including body image disturbance and dissatisfaction
  - Reestablish social engagement
Eating Disorders Treatment Characteristics

- Multidisciplinary team approach
- Family involvement
- Spectrum of Care:
  - Acute Inpatient/Residential/Partial Hospitalization/Intensive Outpatient/Outpatient
Thin

I want to be thin
but give in, give in.
They think they'll win.
They think they'll win.

My smile is plastic,
around the nasogastric tube.
It feels cold and tough.
Not enough lube

They think they've won,
I've eaten a bun – cream.
But I have a dream, an ana-dream.
You can't steal my dream.
Stick that up your blubbery arse,
psychiatric team.
Eating Disorders Indications for Hospitalization

- Weight less than 75% of ideal
- Significant hypovolemia or hypotension (<80/50 mmHg)
- Orthostatic changes (HR > 20 bpm, BP > 10 mmHg)
- Cardiac dysfunction and arrhythmia, including QT prolongation
- Bradycardia <45 bpm
- Serious electrolyte or metabolic abnormalities, including K <2 mg/l or blood glucose level <50 mg/dl
Eating Disorders Indications for Hospitalization

- Hypothermia <96°F
- Failed outpatient treatment
- Acute food refusal
- Acute psychiatric emergencies or comorbid diagnosis interfering with treatment
- Intractable bingeing and purging
### Eating Disorders Complications

<table>
<thead>
<tr>
<th>Most common in adolescents</th>
<th>Unique to adolescents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metabolic</td>
<td>Pubertal delay/interruption</td>
</tr>
<tr>
<td>Gastrointestinal</td>
<td>Osteoporosis</td>
</tr>
<tr>
<td>Cardiovascular</td>
<td>Growth impairment</td>
</tr>
<tr>
<td></td>
<td>Structural brain changes</td>
</tr>
</tbody>
</table>
Eating Disorders
Metabolic Complications

- Dehydration
- Hypokalemia
- Hyponatremia
- Hypophosphatemia

- Hypomagnesemia
- Hypoglycemia
- Hypokalemia
Eating Disorders
Metabolic Complications

- Hypokalemia
  - Secondary to vomiting/poor intake
  - Oral potassium replacement for mild to moderate hypokalemia (2.5-3.5 meq/l); 20-40 meq BID-QID; not to exceed 40 meq/dose
  - IV replacement and monitoring for severe hypokalemia (<2.5 meq/l)

- Hypophosphatemia
  - Decreased intake, loss during starvation, and insulin mediated intracellular shifts
  - Oral phosphate supplementation
  - IV phosphate if severe, symptomatic (<1 mg/dl)
  - Monitor serum phosphate daily during refeeding, nadir at day 4
Eating Disorders
Cardiac Complications

- Sinus bradycardia
- Orthostatic Hypotension
- Ventricular dysrhythmias
- Decreased myocardial mass and contractility
- Mitral Valve Prolapse

- Abnormal response to exercise stress test
- Congestive Heart Failure
- Prolonged QTc and ECG abnormalities
- Ipecac cardiomyopathy
Eating Disorders
Gastrointestinal Complications

- Delayed gastric emptying
- Constipation
- Elevated liver enzymes
- Superior mesenteric artery syndrome
- Elevated liver enzymes
- Acute pancreatitis

- Necrotizing colitis and rectal prolapse
- Esophagitis, Mallory Weiss, UGIB
- Gastric dilation and rupture
- With laxative abuse: paralytic ileus/cathartic colon
Eating Disorders
Complications in Adolescents

- Interruption of Puberty
- Structural Brain Changes
- Interruption of Puberty
- Osteopenia
  - In one or more sites in 90% of patients who meet DSM IV
  - Weight gain associated with increase in BMD might not revert to normal
  - HRT not proven effective in increasing BMD in adults
  - Weight restoration, Ca+Vit D, moderate weight-bearing exercise
Eating Disorders
Nutritional Rehabilitation

- Initial energy requirements may be as low as 800-1000 kcal/day but must be increased to reflect metabolic recovery
- Prescribed energy intake 130% of measured or calculated expenditure
- Increase intake by 200-300 kcal q 2-3 days as tolerated
Eating Disorders Nutritional Rehabilitation

- Variable rate of weight gain but 2-3 lbs/week optimal
- Watch for refeeding syndrome (Ca, MG, PH)
- K, Ph, Mg supplementation
- Nutritional education and monitoring
Bulimia Nervosa
Nutritional Rehabilitation

- Increase caloric intake as in AN if underweight
- Focus on bulimic eating rather than purging as target symptom
- Encourage regular meals and avoidance of foods that trigger binge-eating
- Encourage moderate exercise as an alternative modality for weight control
- Nutritionist follow-up
Anorexia Nervosa Psychology and Psychopharmacology

- Psychoeducation, Interpersonal Therapy, Family Therapy
- Some may benefit from psychotropic Rx
- Fluoxetine does not appear to be effective in treating primary symptoms of AN
- Differing results on efficacy of medication after weight restoration
- SSRI’s most commonly used
- Atypical neuroleptic medications under study
Bulimia Nervosa
Psychology and Psychopharmacology

- CBT reduces binge eating in 30-50% of patients
- Multiple studies show positive effect of antidepressants
- Fluoxetine FDA approved drug for BN in adults in the US
- Improvement of depression, anxiety and concern with shape, weight, and drive to restrict (Fluoxetine BN Collaborative Study Group, 1992)
- CBT with medication may be more effective than either modality alone
Stephanie’s evaluation was consistent with a diagnosis of Anorexia Nervosa and she agreed to begin treatment. She met weekly with a medical provider, nutritionist, and mental health therapist. She gained $\frac{1}{2}$ pound a week for three weeks.

After much discussion among her parents, Stephanie, and her treatment team about whether she should attend college, Stephanie left for college, promising to continue treatment through her college health services with ongoing communication between her primary care clinician and her treatment team.
Despite having a treatment team in place, she returned home on her Christmas break having lost another 3.6 kg. Her condition warranted hospitalization. For the next four years she had multiple admissions to various hospitals and treatment programs. Her college career was interrupted.

At 23, she became more engaged in the treatment process and enrolled in a local university. Six years after diagnosis she is now normal weight (54 kg), but still struggles with the eating disorder. She continues in therapy and is being treated for depression.
Eating Disorders
Anorexia Nervosa Prognosis

- Prognosis in adolescent better than adults
  - “50% “Good”, 30% “Fair”, 20% “Poor”
  - 76% full recovery, 10% partial recovery, 14% no recovery (Strober, et al)
- Time to recovery of 57-79 months
- 30% hospital readmission 1 year from treatment
- 2-8% mortality mostly from suicide and medical complications of starvation
Eating Disorders
Anorexia Nervosa Prognosis

- **Good Prognostic Features**
  - Short duration of illness
  - Early intervention
  - Early onset <14
  - No psychological comorbidities
  - Infrequent or no binging-purging behavior
  - Supportive family

- **Poor Prognostic Features**
  - Long Duration of illness
  - Binging and purging
  - Comorbid mental illness
  - Lower weight at diagnosis
Eating Disorders
Bulimia Nervosa Prognosis

- Higher rates of partial and full recovery than in AN: 5 year recovery ranging from 35-75%
- Chronic, relapsing condition, 30% relapse in 1 - 2 years
- High morbidity but low mortality rate
Conclusion

- Eating Disorders cause significant morbidity and mortality
- Early identification and referral is key
- Prevention science is an emerging area of study
Specific Practice Changes

- Review height, weight and plot growth curves at every visit
- Ask and document the Last Menstrual Period as a vital sign
- Ask about eating habits/dieting
- Consider eating disorders in peri-pubertal low weight males, and in anyone with pubertal delay
- Do not assume all bradycardia is exercise induced
References

- Academy of Eating Disorders. (2011). Eating Disorders: Critical Points for Early Recognition and Medical Risk Management in the Clinical Care of Individuals with Eating Disorders, 2nd Edition. [Link](http://www.aedweb.org/AM/Template.cfm?Section=Medical_Care_Standards&Template=/CM/ContentDisplay.cfm&ContentID=2413)


Resources

- American Academy of Eating Disorders
  - www.aedweb.com

- Eating Disorders Network of Central Florida
  - www.edncf.com

- International Association of Eating Disorders Professionals
  - www.iaedp.com
"If you had a tapeworm, would you keep it?"
"...and in this far-off land, there are people who regurgitate their food and eat AGAIN!"
Bulimia Nervosa

- Comorbidity:
  - Approximately 80% lifetime prevalence of another psychiatric condition
  - Affective Disorders, Anxiety Disorders, Personality Disorders, Substance abuse

- Types:
  - Purging type: self-induced vomiting or the misuse of laxatives, diuretics or enemas.
  - Non-purging type: Inappropriate compensatory behaviors are fasting or excessive exercise
Pica

According to the DSM-5 criteria, to be diagnosed with Pica a person must display:

- Persistent eating of non-nutritive substances for a period of at least one month.
- The eating of non-nutritive substances is inappropriate to the developmental level of the individual.
- The eating behaviour is not part of a culturally supported or socially normative practice.
- **Rumination Disorder**
- According to the DSM-5 criteria, to be diagnosed as having Rumination Disorder a person must display:
  - Repeated regurgitation of food for a period of at least one month. Regurgitated food may be re-chewed, re-swallowed, or spit out.
  - The repeated regurgitation is not due to a medication condition (e.g. gastrointestinal condition).
  - The behaviour does not occur exclusively in