Assessment and Treatment of Pediatric Eating Disorders: Empowering Physicians to be part of the Treatment Team

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Disclosures

• Kristen Anderson, LCSW receives payment for consultation and workshops from the Training Institute for Child and Adolescent Eating Disorders

• Karen Bernstein, MD, MPH is on the Advisory Board - Center For Discovery - Glenview
Objectives

1) Participants will understand the rationale and the scientific support for FBT for adolescent eating disorders.

2) Participants will learn assessment skills and diagnostic criteria for adolescent eating disorders.

3) Participants will learn techniques to discuss eating disorder treatment and referrals with patients and their caregivers/families.
In the United States, 20 million women and 10 million men suffer from a clinically significant eating disorder at some time in their life, including anorexia nervosa, bulimia nervosa, binge eating disorder, or EDNOS (Wade, Keski-Rahkonen, & Hudson, 2011) (EDNOS is now recognized as OSFED, other specified feeding or eating disorder, per the DSM-5.)
The role of the physicians on the eating disorder treatment team is to:

1. Identify the disorder.
2. Rule out other causes.
3. Monitor for consequences.
4. Treat the disorder!!!!!
Reviewing the Medical Portion
1. Identification of patients with eating disorders
Anorexia Nervosa-DSM-5

- 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).

- 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
Changes from DSM 4

- Amenorrhea and % ideal body weight have been REMOVED as criteria
Younger patients may...

- Not be low in weight for height
- Not express fear of weight gain or body image distortions
- Have completed puberty
- Be more likely to be male (compared to older)
- Be likely to have lost weight faster
- Be less likely to “Purge”
- Be more likely to have a good prognosis!
**Purging**

**General appearance**
Often unremarkable

**Behavioral/psychiatric**
Impulsive, sexual acting out, shoplifting, mood disorders, addictions, character disorder, suicide

**Ophthalmologic**
Conjunctival hemorrhages
Mydriasis with stimulant abuse

**Oral**
Erosion of dental enamel, cavities; marked parotid hypertrophy

**Skin**
Russell's sign (callosities in dorsum of hand; peripheral edema

**Cardiac**
Irregular pulse, cardiac arrhythmias; sudden death; cardiomyopathy (ipecac abuse)

**Musculoskeletal**
Myopathy (ipecac abuse)

**Renal**
Pseudo Bartter's syndrome

**Gastrointestinal**
Diarrhea, melena, cramping (laxative abuse), GE reflux, chest pain/esophagitis, Mallory Weiss tears

**Endocrine**
Irregular menses, secondary hyperaldosteronism

**Starvation**

**General appearance**
Emaciated

**Behavioral/psychiatric**
Inhibited, anxiety disorders, mood disorders, character disorder, suicide

**Neurological**
Slow reflexes, hyperactive, hypervigilant, organic brain syndrome, brain atrophy, seizures with water intoxication

**Ophthalmologic**
Enophthalmos

**Oral**
Hypertrophy of salivary glands

**Skin**
Dry, yellowish, lanugo

**Cardiac**
Bradycardia, hypotension, impaired myocardial contraction, mitral valve prolapse, prolongation of Q-T interval; sudden death

**Musculoskeletal**
Loss of lean body mass, osteopenia–osteoporosis

**Renal**
Isothienenia, renal stones, end stage renal disease

**Gastrointestinal**
Constipation; delayed gastric emptying

**Endocrine**
Amenorrhea, pseudo hypothyroidism, atrophic vaginitis, breast atrophy, decreased antidiuretic hormone, delayed puberty, euthyroid sick syndrome
Differentiation of eating disorders from other diseases

- Gastrointestinal disease
  - Crohn’s disease, ulcerative colitis
  - Celiac disease
- Endocrine disease
  - Diabetes mellitus
  - Hyperthyroidism
- Pulmonary diseases
- Malignancy
- Chronic infection
- Central nervous system tumors
Differentiation of eating disorders from other diseases (continued)

Psychiatric disorders

- Depression
- Obsessive compulsive disorder
- General anxiety disorder
- Panic disorder
- Food phobia
<table>
<thead>
<tr>
<th>Study</th>
<th>Rationale/Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry Panel/Electrolytes</td>
<td>• Hyponatremia- water loading or inappropriate regulation of antidiuretic hormone (ADH)</td>
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<tr>
<td></td>
<td>• Hypophosphatemia- severe malnutrition</td>
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<tr>
<td></td>
<td>• Hypokalemic, hypochloremic metabolic alkalosis- vomiting</td>
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<td></td>
<td>• Acidosis- laxative abuse</td>
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<td></td>
<td>• Hypoglycemia</td>
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<td>• High blood urea nitrogen &amp; creatinine- dehydration +/- purging</td>
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<tr>
<td>Complete Blood Count</td>
<td>• High hemoglobin- dehydration</td>
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<td></td>
<td>• Anemia- chronic disease and/or iron deficiency</td>
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<td>• Leukopenia &amp; thrombocytopenia</td>
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<tr>
<td>Laboratory Evaluation (cont.)</td>
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</table>
| **Liver function tests (including prealbumin)** | • Prealbumin & albumin- evaluate nutritional status  
• Abnormal liver enzymes- fatty liver infiltration |
| **Cholesterol, triglycerides** | • Elevated due to abnormal lipoprotein metabolism |
| **Erythrocyte Sedimentation Rate (ESR)** | • Normal to low in anorexia (high in IBD) |
| **Urinalysis** | • Low specific gravity- water loading |
| **AM cortisol** | • Rule out adrenal insufficiency |
| **Thyroid function tests** | • Euthyroid sick sinus syndrome- normal or low TSH & normal thyroxine  
• Rule out hyper- or hypothyroidism |
| **Beta HCG** | • Rule out pregnancy |
| **Prolactin** | • Rule out prolactinoma |
| **LH & FSH** | • Rule out ovarian failure |
Other Evaluation

- Electrocardiogram (EKG): indicated for bradycardia <50 beats per minute to rule out prolonged QTc or dysrhythmias. Low voltage, ST segment depression, conduction abnormalities, et. al may be seen.

- Dual Emission X-ray Absorptiometry (DEXA) Scan: evaluate bone density in patients amenorrheic > 6mths.

- Imaging: chest x-ray, brain magnetic resonance imaging, barium enema, upper gastrointestinal series with small bowel follow through, etc should be considered based on clinical situation.
Role of the physician after diagnosis
Treatment

- Targeted intervention directed at starvation is promising
  - Do not wait!!

- Acting early and decisively decreases chronicity
Determination of normal weight for height in children and adolescents

Growth chart
- Height
- Weight
- Body mass index for age
Setting goal weight

- Use linear growth history if available – return to percentile curve
- Can use median body weight for height/age/gender
- Genetic potential (mid-parental height)
- 4lbs higher than wt which lost menses (at least)
- Families LISTEN to their doctors – **DO NOT UNDERESTIMATE GOAL WEIGHT**
Choosing weight

For a kid that has always been underweight (<10th percentile BMI for age) for no good reason (parents are normal weight, no micro-preemie birth history, no wasting disease that accounts for poor growth) aim for the 25th percentile BMI for age at the projected height they should have been.

For a kid that has always been overweight (>85th percentile BMI for age), aim for the 75th percentile BMI for age to start, understanding that a percentage of kids may need to be higher to truly have their body and brains heal.
Plot the growth curve
Nutritional Counseling

- Caloric needs are often surprising
  - May be as high as 3000–6000 kcals a day
- May be hypermetabolic for up to 2 years
- Data on “starting slow” to prevent refeeding syndrome is being refuted
Levels of care for eating disorders

- Outpatient
- Intensive outpatient (IOP) or partial hospital (PHP)
- Residential treatment
- Inpatient hospitalization
- Community resources
<table>
<thead>
<tr>
<th>Criteria for Hospitalization of Adolescents and Young Adults with Anorexia Nervosa.*</th>
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<tbody>
<tr>
<td>Weight less than 75% of expected body weight for age, sex, and stature</td>
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<tr>
<td>Continued weight loss despite intensive outpatient therapy</td>
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<tr>
<td>Acute weight decline and refusal of food</td>
</tr>
<tr>
<td>Hypothermia (body temperature &lt;96°F [36°C])</td>
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<tr>
<td>Systolic blood pressure &lt;90 mm Hg</td>
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<tr>
<td>Resting heart rate &lt;50 beats/minute during the day and &lt;40 beats/minute during the night</td>
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<tr>
<td>Orthostatic changes in blood pressure (&gt;10 mm Hg)</td>
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<tr>
<td>Orthostatic changes in pulse (&gt;20 beats/minute)</td>
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<tr>
<td>Electrolyte abnormalities</td>
</tr>
<tr>
<td>Arrhythmia</td>
</tr>
<tr>
<td>Suicidality (ideation, plan, or attempt)</td>
</tr>
</tbody>
</table>

* Data are from the American Academy of Pediatrics\textsuperscript{12} and the Work Group on Eating Disorders.\textsuperscript{13}
Goals of Inpatient Medical Management

- Correction of the acute medical problem
- Refeeding (nutritional rehabilitation)
- Monitoring for cardiac, neurologic, and metabolic complications (refeeding syndrome)
NG Feeds

• It’s not punishment

• Need to assure proper nutrition to get the patient's body and brain working properly

• Having the tube for a few days takes the pressure off them for "giving in" to eating and allows them to blame us for any weight gain that occurs with the NG tube

• Gain weight quicker with NG tube feedings overnight
Refeeding Syndrome

- During refeeding, there is a shift from fat to carbohydrate metabolism.
- Insulin is released, facilitating cellular glucose uptake and protein anabolism.
- Increased cellular uptake of phosphate, magnesium, and potassium, leading to decreased serum phosphorus levels.
- Consequences can include:
  - rhabdomyolysis
  - Decreased cardiac motility
  - cardiomyopathy
  - respiratory and cardiac failure
  - hemolysis
  - acute tubular necrosis
  - Seizures
  - delirium
Prevention of Refeeding Syndrome

• Monitor vital signs and orthostatic changes in blood pressure and pulse, weight

• Evaluate for fluid retention

• Daily physical examination

• Daily to twice daily levels of electrolytes, (phosphorus and magnesium) (recent articles question need for this)

• Oral supplementation with phosphorus (500 bid x 5 days)
After in-patient

- Residential treatment, partial hospitalization (day treatment), or outpatient treatment
- Most inpatient and residential treatment programs for persons with eating disorders admit only women
- The only evidence-based outpatient treatment for anorexia nervosa is family-based therapy
Medication Therapy

- Anorexia–
  - SSRI’s in combination w/CBT (minimal use unless weight restored)
  - + /– olanzapine or Quetiapine (data is limited at best)
  - Calcium, phosphate supplementation
  - Iron supplementation
  - Consider motility agent
  - Stool softener
Amenorrhea and BMD

- Bone density is reduced at either hip or spine by more than 2.5 SD (osteoporosis) in almost 40% of patients with AN
- Optimizing bone growth and achieving peak bone mass occurs during adolescence
  - Failure to do so markedly increases long term risk of nontraumatic fractures
- Etiology of bone disease is multifaceted
  - Increased bone resorption without concomitant increase bone formation (analogous to steroid induced osteoporosis)
  - Reduced hepatic synthesis of IGF-1
  - Elevated cortisol (inversely related to levels of osteocalcin)
- Low BMI and absence of menses most predictive of low BMD
Hormonal treatment

• COC do not restore *spontaneous* menses
  • Creates exogenous ovarian steroid environment
  • False sense of security

  • May compromise bone health further by first pass effects on hepatic production of IGF-1 (a bone trophic hormone)
  • Despite this info, surveys indicate 75-80% of practitioners still prescribe COC (Robinson E, 2000)

• Transdermal estrogen has some promise (Misra M, et al 2011, Cardim HJ 2001, Kam GY 2000)
  • Dose of 100 mcg twice weekly with cyclic progesterone
  • Needs further investigation
Weight bearing exercise

- Increases BMD across lifespan
- No prospective studies in setting of amenorrhea
- May result in fracture
Optimal treatment

• Address the underlying low energy availability

• **Restoration or normalization of body weight is best strategy for successful resumption of menses and improved bone health**

• Women with amenorrhea will lose 2-3% of bone mass per year if condition remains untreated

• Calcium and Vitamin D (though not shown to be sufficient to prevent osteopenia)
Why? - Traditional Models

- Media/Cultural/Environmental
- Biologic/ Genetic/Developmental
- Psychological
New Research

Based on some old research.....
The Minnesota Starvation Experiment

- During WWII, Ancel Keys studied starvation and sustenance diets using 32 conscientious objectors from Civilian Public Service as test subjects eventually producing his two-volume *Biology of Human Starvation* (1950).
Recruitment brochure cover for the Minnesota Experiment.

Life magazine photograph of conscientious objectors during starvation experiment.
Biology of Human Starvation (Keys 1944): study of effects of starvation on young, healthy men

- Strong preoccupations with food.
- Emotional and personality changes.
- Inflexible eating patterns.
- Social withdrawal.
- Decreased concentration, comprehension, and judgment.
- Binge eating followed by remorse.
- Distrust of authority
- Depression – one individual attempted suicide
Behavioral and psychological consequences of eating disorders

- Ancel Keys’ study of the effects of starvation on healthy young men showed that many psychological and behavioral symptoms of eating disorders were the result of the biology of starvation.
Malnutrition leads to changes in mental health
What does this tell us?

- The malnutrition MAY come first

- Weight and caloric intake must be returned to normal in treatment process while psychological issues are also addressed.
To the “classic” Vulnerabilities

- Society
- Heredity
- Prenatal and perinatal events
- Temperamental traits/behavioral inhibition
- Internalizing disorders/anxiety/depression
- Puberty/female sex
- Chronic stress.

We now need to add…
Starvation!
Research to support FBT

- RCT’s indicate 70–80% of adolescents with anorexia do well when treated early with weight restoration, normalization of eating-related thoughts and behaviours, and psychological functioning (LeGrange et al 1992; Eisler et al 2000, Lock et al 2005, 2010)
Observed partial and full remission rates by treatment assignment (end of treatment [EOT]: adolescent-focused individual therapy [AFT], n = 49; family-based treatment [FBT], n = 50; 6-month follow-up: AFT, n = 47; FBT, n = 44; and 12-month follow-up: AFT, n = 49; FBT, n = 45).
<table>
<thead>
<tr>
<th>Drug treatment</th>
<th>Anorexia nervosa</th>
<th>Bulimia nervosa</th>
<th>Atypical eating disorders</th>
<th>Binge eating disorder</th>
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<tr>
<td></td>
<td>Evidence</td>
<td>Effect</td>
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<td>Effect</td>
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<tr>
<td>Antidepressants (acute treatment)</td>
<td>Modest</td>
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<td>Considerable     **</td>
<td>None</td>
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<tr>
<td>Antidepressants (relapse prevention)</td>
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<td>*</td>
<td>Modest *</td>
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<tr>
<td>Antipsychotics</td>
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<tr>
<td>Appetite suppressants</td>
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<td>Modest D</td>
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<thead>
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<th>Psychological treatment</th>
<th>Anorexia nervosa</th>
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<td>Evidence</td>
<td>Effect</td>
<td>Evidence</td>
<td>Effect</td>
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<tr>
<td>Cognitive analytic therapy (CAT)</td>
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<td>*</td>
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<td>−</td>
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<tr>
<td>Cognitive behaviour therapy (CBT)</td>
<td>Modest</td>
<td>0</td>
<td>Strong     ***</td>
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<td>&quot;Dialectical behaviour therapy&quot;-based treatment</td>
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<td>−</td>
<td>Modest     **</td>
<td>None</td>
</tr>
<tr>
<td>Exposure with response prevention (ERP)</td>
<td>None</td>
<td>−</td>
<td>Moderate     **</td>
<td>None</td>
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<tr>
<td>Family-based therapy for adolescents</td>
<td>Moderate     ***</td>
<td>−</td>
<td>None</td>
<td>−</td>
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<tr>
<td>Interpersonal psychotherapy (IPT)</td>
<td>None</td>
<td>−</td>
<td>Moderate     **</td>
<td>None</td>
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<tr>
<td>Nutritional counselling</td>
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<td>Psychodynamic psychotherapy</td>
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<td>Moderate     **</td>
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<td>Psychoeducational self-help</td>
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<td>Moderate     **</td>
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<tr>
<td>Schema-based cognitive therapy</td>
<td>None</td>
<td>−</td>
<td>None</td>
<td>−</td>
</tr>
<tr>
<td>12-step approaches</td>
<td>None</td>
<td>−</td>
<td>None</td>
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Weight of evidence: none—no studies done, modest—less than four trials (none of superior quality), moderate—at least four trials or two trials of superior quality; considerable—rating between moderate and strong, strong—at least ten trials and at least five trials of superior quality. Magnitude of effect: −treatment not studied, 0—no beneficial effect, * = slight beneficial effect, ** = some beneficial effect, *** = moderate beneficial effect, **** = pronounced beneficial effect—ie, substantial and persistent effect.

Eating disorders
Fairburn, Christopher G et al.
The Lancet, Volume 361, Issue 9355, 407 - 416
Family Based Treatment

The Maudsley Method
“The patients should be fed at regular intervals, and surrounded by persons who would have moral control over them; relatives and friends being generally the worst attendants.”

Sir William Gull (1816-1890)
“It is necessary to separate both children and adults from their father and mother, whose influence, as experience teaches, is particularly pernicious”

Jean Martin Charcot (1825-1893)
The 20th Century

First Half – Parentectomy*: “A slang term meaning removal of a parent (or both parents) from the child.”

*MedicineNet.com

Second Half – Salvador Minuchin, Child Psychiatrist and parent of Structural Family Therapy
The Maudsley Approach

Hospitalization

Traumatic

Disempowers Parents
Family-Based Treatment

- Developed at the Maudsley Hospital in London in the 1980s
- Refined at the University of Chicago and Stanford University
- Takes key strategies or interventions from a variety of Schools of Family Therapy
  - Minuchin – Structural Family Therapy
  - Selvini-Palazzoli – Milan School
  - Haley – Strategic Family Therapy
  - White – Narrative Therapy
Family-Based Treatment

- Theoretically agnostic – no assumptions about the origin of the disorder, focus on what can be done

- Parents are a resource with no blame directed to either the parents or the ill adolescent

- Siblings play supportive role and protected from the job assigned to the parents

- FBT is a team approach, i.e., primary therapist, child & adolescent psychiatrist, PRIMARY CARE PROVIDER
Principles of Family Based Therapy

- Parents are viewed as the most useful resource in their child’s treatment.
- Parents play an active and vital role in the recovery process and in restoring their child’s weight.
- The adolescent is viewed as incapacitated in terms of eating behaviors – externalization of the illness.
- Focus is on current eating disorder symptoms and not on underlying issues.
- Agnostic as to cause.
Suitability and Context

- Appropriate for children and adolescents, >75% IBW and otherwise medically stable

- Outpatient intervention designed to a) restore weight and b) put adolescent development back on track

- Brief hospitalization to resolve medical concerns
What the family hears (or overhears)

- Your daughter has a deep pathology.
- Your daughter is a brat.
- Your family is dysfunctional.
- You have an enmeshed family.
- Your daughter needs to be left alone and she is the one to decide what she is going to eat.
- Your daughter must have suffered abuse.
- Once anorexic always anorexic
- She needs a “parentectomy”
What the research says

- Most patient’s do not have a “deep seated pathology”

- However there is a 70% comorbidity

- There is absolutely no evidence pointing towards a “dysfunctional family”
  - However there is a strong genetic component

- Recovery and Cure is highly likely in childhood and adolescent onset A.N.
The Maudsley Approach

There is little doubt that the presence of an ED has a major impact on family life. With time, food, eating, and their concomitant concerns begin to saturate the family fabric. Consequently, daily family routines as well as coping and problem solving behaviors are all affected.
“Don’t give up too soon, as the family is the best resource for recovery.”

What does this treatment look like?

Adolescent Anorexia Nervosa
### Three Phases of FBT

<table>
<thead>
<tr>
<th>Phase 1</th>
<th>(Sessions 1-10)</th>
<th>• Parents in charge of weight restoration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 2</td>
<td>(Sessions 11-16)</td>
<td>• Parents hand control over eating back to the adolescent</td>
</tr>
<tr>
<td>Phase 3</td>
<td>(Sessions 17-20)</td>
<td>• Discuss adolescent developmental issues</td>
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</table>
Phase 1: Parents in Charge

- Education on malnutrition and long-term risks of being underweight-tone must be serious and stern.

- Remove guilt: their child has a **biological** condition, and is therefore in a situation that is no different than the child with autism, seizure disorder or panic attacks.

- Empower parents: rather than being dysfunctional they are naturally distressed and blindsided by their child’s illness. Remind them they are their child’s best resource to overcome illness.

- Interdict starvation: the patient needs to be nourished in order to be able to make use of therapeutic coaching/supportive relationships. Support that the best agents to renourish the child are the parents, and lift barriers so that parents can carry out their mission.

- Improve nutritional status: A subnormal weight **cannot** be healthfully maintained and full weight restoration helps with cognitions and may reverse all organ damage.
Example of techniques used in Phase 1 of FBT

- [https://www.youtube.com/watch?v=zVK0Cl1w6Nw](https://www.youtube.com/watch?v=zVK0Cl1w6Nw)

- [https://www.youtube.com/watch?v=l7rfZWGfL8](https://www.youtube.com/watch?v=l7rfZWGfL8)
Phase 2: Returning Control to the Adolescent

- Begins when adolescent has reached 90% of ideal body weight and is eating without much resistance
- Process is gradual and age dependent
Phase 3: Establishing Healthy Adolescent Identity

- Begins when adolescent has achieved a healthy weight for age and height
- Treatment focused on general issues of adolescent development and ways in which the eating disorder impacted this process
- Goals are increased personal autonomy, relationships with peers, or getting ready to leave home for the first time
It is not forced feeding
Food is Medicine
Old vs. New

OLD

- ED is the result of control/boundary issues
- “Parentectomies” are needed
- Insight can be gained mid disease and is necessary for recovery

NEW

- Many ED’s are a result biologic/genetic vulnerability
- Parents and family are our best allies
- Nutrition first
- Psychological progress unlikely until nutritional rehab has begun
When not to involve parents

- If children will never be going home
- Abuse
- Loss or lack of mental faculties in parents
- Parental refusal
Families are your most important member of the treatment team
Factors That Predict Recovery

- **Higher initial rate of weight gain during re-feeding.** (over 0.8 kg/week, or 1.75lbs/week) (Lund, BC et al, Int J Eat Disord. 2009 May;42(4):301–5)

- **Younger age of diagnosis and Higher BMI at diagnosis and discharge:** (BMI >17.5 in adolescents age 10–18) (Steinhausen, HC, Int J Eat Disord. 2009 Jan;42(1):19–25)

- **Early intervention:** (within the first 3 years after diagnosis) (Treasure, J, Et Al, The British Journal of Psychiatry Jun 2011, 199 (1) 5–7)

- **Higher percentage of body fat at weight restoration** (Mayer, LE, Et Al, Am J Psychiatry. 2007 Jun;164(6):970–2)

- **Higher energy density and variety of foods during re-feeding and weight restoration.** (Schebendach, JE, Et Al, Am J Clin Nutr. 2008 Apr;87(4):810–6)


- **Continuation of high calorie intake and low activity levels up to 6 months after weight restoration.** (Kaye, W, et al, Int J Eat Disord, 2006, Feb)
So after all this presentation: who is better prepared than a primary care physician?

- Monitor growth and development
- Provide nutritional advice
- Detect physical or mental co-morbidity
- Educate and support patient and family all along
- Refer to and participate/coordinate with a treatment team
- Hospitalize, rescue when required.
- Provide a medical home throughout the ordeal