Obesity Treatment: What Is a “Staged Approach” & What Does it Mean for Clinicians?

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Objectives
After this session, participants will be able to...
- Describe the algorithm proposed by the Expert Committee, including “Staged Approach”
- Describe risk of co-morbidities at different BMI percentiles & severity of obesity
- Describe approaches for intensive treatment – who & what
- Describe outcomes of aggressive dietary & surgical treatments

2007 Expert Committee Recommendations on Childhood & Adolescent Overweight & Obesity
- Sponsors: AMA, CDC, HRSA
- 16 organizations represented on EC: AAP, ADA, APSA, NAASO, NMA, et al
- 3 Writing Groups/Sections:
  - Assessment
  - Prevention
  - Treatment
- Evidence-based reviews
- Summary: Sarah Barlow, MD

What’s New? Expert Committee Recommendations ’07
- Terminology
- Evidence based recommendations for diet and physical activity assessment, prevention and treatment
- Tailored approach to treatment, based on severity & age

Terminology & Definitions
### Changing Language & Definitions

**1998 Expert Committee**

- "At risk of overweight"
  - 85-95th BMI % for age (aka AROW)
- "Overweight"
  - > 95th BMI % for age

**Rationale**
- Cut-points minimize over- & underdiagnosis
- Weaker correlation in children of BMI w/ fatness
- Stigma of terminology

**2007 Expert Committee:**

- "Overweight" - 85-95th BMI % for age
- "Obese" - > 95th BMI % for age

**Rationale for Change in Terminology**

- Obesity: excess adiposity
- Overweight denotes high LBM or fatness, more appropriate for 85-95th% BMI range
- AROW & OW terminology misunderstood & frequently mis-used by parents & providers
- Continuity with adult cut-points of BMI ≥ 25 & 30 for overweight & obesity
- Stigmatization legitimate concern; different language for patients/families (excess weight, high BMI etc)

### Definitions: New Category

**Characterizing “Severe Obesity”**

- > 95% = Obese
- 97th % BMI highest on chart
- Z-scores not easily available (3 = 99th %)
- (BMI > 40 – bariatric surgery)

### Trends in Childhood Overweight: Increasing Severity

- Onset overweight < 8 yr & persisting into adulthood → adult BMI 41
- Childhood onset of overweight may account for disproportionate burden of severe adult obesity (BMI > 40)

- Increased skewness at upper end of BMI distribution (US: 4% > 99th %)
- Greatest risk for adverse health outcomes at highest BMI

*Flegal & Troiano, '00*
Characterizing Severe Obesity

BMI $\geq 99\%$ …
- Strongly associated with comorbidities
- Excess adiposity
- Persistence
- Influence therapy

Universal assessment of obesity risk and steps to prevention and treatment

Barlow, S. E. et al. Pediatrics 2007;120:S164-S192

Treatment Overview: Goals

- Behavioral goals and parenting skills
- Self esteem and self efficacy
- BMI velocity, weight loss targets & BMI %
- Reduce co-morbidities

Treatment Overview: A Staged Approach

- Prevention Plus
- Structured Weight Management
- Comprehensive, Multidisciplinary Intervention
- Tertiary Care Intervention

Stage 1: “Prevention Plus”

- Family visits with physician or other health care professional
- Lifestyle/behavioral recommendations (see assessment section)
- Motivational interviewing – negotiate change; involve pts in decision making
- Small changes, specific, lifestyle targets for $\Delta$
- Setting: Primary Care

“If no improvement after 3-6 mo, advance to Stage 2”

Stage 2: “Structured Weight Management”

- *Stage 1 rec’s + more structure & support*
- Individual or group follow-up
- ± visits with a dietitian, exercise therapist or counselor
- ↑ monitoring (pt/family, provider), goal setting and rewards
- Frequency: monthly or individualized per family needs, risk factors
- Setting: Primary care, schools/community?

“If no improvement after 3-6 mo, pt should advance to Stage 3”
Stage 3: “Comprehensive, Multidisciplinary”

- ↑ intensity, frequency, support
- Structured behavioral program, diet & PA goals; more prescriptive
- Multidisciplinary obesity care team:
  - Behaviorist, dietitian, exercise specialist
  - MD – assess/Rx co-morbidities
- Frequency: e.g. weekly group sessions for 8-12 weeks with follow up
- Setting: ? Schools, Community, Clinical

Stage 4: “Tertiary Care Intervention”

- Who: BMI > 95% w/ signif. co-morbidities, w/o success in Stages 1-3, or BMI > 99%
- Multidisciplinary team, subspecialists
  - Identify, manage co-morbidities
- Structured interventions:
  - Medications - sibutramine, orlistat
  - Structured diets: High Protein / Low Carb; very low calorie
  - Physiotherapy
  - Weight control surgery - gastric bypass, banding
- In-patient admissions
- Setting: Tertiary care referral centers

Severe Obesity: How bad?

Severe Obesity & CVD Risk Factors:

- Cross-sectional (10,099) & longitudinal (2,392) analyses on subjects Bogalusa Heart Study
- X-sect: 5-17 yr olds (Mean 11.4 yr)
- Longitudinal: 5-14 yr → adult (Mean 27 yr)
- Anthropometry, lipids, insulin, SBP & DBP

Prevalence of multiple risk factors according to BMI percentile

Freedman et al, J Peds, 2007

Obesity in Adults: 100% of BMI ≥ 35

Freedman et al, J Peds, 2007
How common?

- US: BMI ≥ 97th % 2005-2006, 2-19 yr:
  - Overall: 11.3%
  - White: 9.6
  - Blacks: 15.9
  - Mex-Amer: 15.5 (Ogden CL, JAMA, 2008)
- Denver Children’s Hospital in-pt admissions, 2007:
  - BMI > 40: 2.3%
  - BMI ≥ 99th%: 4.3% (ED: 12%)  

Implications for Treatment

Stage 4

WHO? Single Approach Unlikely to be Ideal

4 yo, BMI=95% 2 yo, BMI > 99% 16 yo, BMI > 40

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Cochran Review (2009)

- 10 studies of drug interventions:
  - Metformin
  - Orlistat
  - Sibutramine
- Life style intervention +/- medication:
  - Significant weight reduction at 6 & 12 mo f/u
  - Range of adverse effects in drug RCT

Surgery

- Criteria
- Type: Bypass vs Adjustable Band
- Positive effects after ≥ 1 yr f/u on:
  - Obstructive sleep apnea
  - Type 2 diabetes mellitus
  - Cardiovascular risk factors

**Diet: Intensive Approaches**

- High Protein/Low Carbohydrate vs Low Fat
  - Used historically for severe obesity
  - Aka “Protein Sparing Modified Fast”

**Rationale for “Low Carb” – Protein [Sparing] Modified Fast**

- High protein (& low carb) proposed to minimize loss of lean body mass w/ weight loss
- Satiety ± euphoria
- Better metabolic tolerance in face of insulin resistance?

[CHO $\rightarrow^\uparrow$ insulin $\rightarrow^\downarrow$ “fat burning,” $\pm$ hypoglycemia]

- Faster weight loss – “jump start”
- Unrestricted in calories; restricted in choices

**Low Carb Diet - Adolescents**

Methods:
- Randomized, nonblinded study x 12 wk
- 16 – low carb (20 $\rightarrow$ 40 g/d); 14 – low fat (< 30%)
- Overweight (BMI > 95th %); mean BMI 35
- Outcomes: weight, lipids

*Sondike et al, J Peds, 2003*

**Results after 12 wk intervention:**
- Low Carb lost > 2x more weight:
  - 9.9 vs - 4.1 kg (p < 0.05)
- Dietary Intake (subgroup):
  - LC: 1830 kcal  LF: 1100 (p=0.03)
- Lipids:
  - LC: ↓TG (p=0.07)  LF: ↓LDL (p=0.01)

*Sondike et al, J Peds, 2003*

**Low Carb Diet – Denver Adolescents**

- Severely overweight (≥ 175% IBW)
- Hi protein/low carb (HPLC) vs Low Fat (LF) diet
  - HPLC: CHO 20 g/d (ketones x BID)
- Monitor weight, lipids, GTT, body composition
- Intervention x 12 wk; f/u at 24 & 36 wk
- n = 46: HPLC 24; LF 22

*Krebs et al, submitted, 2009*

**Change in BMI-Z after 13 wk Intervention + 3 & 6 mo Follow-up**

*Krebs et al, submitted, '09*
Low Carb Diet – Denver Adolescents

- **Weight**: Low Carb lost more weight
  - 9.0 kg vs 5.6 kg (p < 0.06)
- **Body composition**: both lost fat; HPLC not protein sparing
- **Lipids**: improvements for both groups, no difference by diet, except ↓ TG HPLC
- **CHO metabolism**: both groups improved
- **No adverse effects of HPLC**

HPLC +

- For severely obese w/ medical or social urgency
- In-patient hospitalization x few weeks
  - HPLC - BiPAP optimization
  - PT x bid - Medical mgt
  - Pt education - Family education
  - Improved co-morbidities
- Regular f/u in out-pt weight mgt clinic
- Continued weight loss, ↓ co-morbidities

Staged Approach: Risks Differ, Interventions Differ, Outcomes Differ

- 85-95th %
- ≈ 95th %
- > 99th %

Summary:

- **Expert Committee Recommendations**:
  - Routine assessment of BMI for age
  - Categorize risk
- **Match risk w/ intervention**
- Level 4: consider your setting, options/resources
- Potential for better outcomes if more realistic approach