

# Access to Transplant: Worth the Weight (Loss)

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## Conflicts of Interest

I do not have any relevant disclosures. Off label indications will be discussed.



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## Learning Objectives

1. Describe the importance of weight management in the transplant setting.
2. Review weight management drugs including mechanism of action, side effect profile, and patient-specific factors.
3. Discuss successes and barriers for implementing weight management strategies for patients in the transplant setting.



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## Case Study

BG is a 67 yo M with a PMH of ILD 2/2 hypersensitivity pneumonitis, OSA, and osteopenia. He requires 6L of oxygen at rest. Pertinent labs and vitals are as follows:

- HgbA1c: 5.2%
- Total Cholesterol 95, HDL 29, LDL 52
- Weight: 215 lbs
- Body Mass Index (BMI): 33.81 kg/m<sup>2</sup>



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## Case Study, cont.

BG is being considered for lung transplant. What currently precludes him from transplant?

- a. His oxygen requirement
- b. His diagnosis of osteopenia
- c. His age
- d. His BMI



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## Pre-Test Question #1

Which of the following is true?

- a. There is a standard BMI cutoff for all transplant centers for each organ transplant.
- b. All organ transplants (i.e. lung, heart, kidney) use the same BMI cutoff.
- c. Each transplant center and transplant organ group within that center select their BMI restriction criteria.




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### Pre-Test Question #2

Match the appropriate weight management therapy with the expected weight loss:

- a. Liraglutide, 18%
- b. Semaglutide, 15%
- c. Naltrexone/bupropion extended release, 12%
- d. Tirzepatide, 8%




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### Pre-Test Question #3

What is a potential barrier to establishing transplant weight loss clinics?


- a. Patient willingness to be on a lifelong medication for weight management
- b. Insurance coverage
- c. Clinic and staff availability
- d. All of the above



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### Obesity in the General Population

- Nearly 1 in 3 adults (30.7%) are overweight (BMI 25-29.9 kg/m<sup>2</sup>)
- More than 2 in 5 adults (42.4%) have obesity (BMI 30- 39.9 kg/m<sup>2</sup>)
- About 1 in 11 adults (9.2%) have severe obesity (BMI > 40 kg/m<sup>2</sup>)




Age adjusted prevalence of obesity among adults ages 20 and older by sex and age, U.S., 2017-2018

Age Group	Total	Men	Women
20 and over	42.4	41.2	44.8
20-29	42.6	43.0	40.3
30-39	46.4	45.4	47.2
40-59	42.2	41.9	43.3
60 and over	43.3	43.3	43.3

Age adjusted prevalence of obesity among adults ages 20 and older by sex, race, Hispanic Origin, U.S., 2017-2018

Race/Origin	Total	Non-Hispanic white	Hispanic	Non-Hispanic black	Non-Hispanic Asian
Total	42.4	42.3	44.8	44.4	44.4
Non-Hispanic white	42.3	42.3	44.8	44.4	44.4
Hispanic	44.8	42.3	44.8	44.4	44.4
Non-Hispanic black	44.4	42.3	44.8	44.4	44.4
Non-Hispanic Asian	44.4	42.3	44.8	44.4	44.4



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### Factors Leading to Increasing Rates of Obesity


- Worldwide prevalence of obesity nearly **tripled** between 1975 and 2016




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### Obesity and Chronic Disease


- Obesity is an independent risk factor for many chronic diseases that lead to end stage organ disease
- Obesity exacerbates complications from existing conditions



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### Indications for Transplant and Rates of Obesity

Kidney Transplant	Liver Transplant	Lung Transplant	Heart Transplant
<ul style="list-style-type: none"> <li>• Hypertension: 41%</li> <li>• Diabetes: 55%</li> </ul>	<ul style="list-style-type: none"> <li>• Alcohol-related liver disease: 20%</li> <li>• Metabolic dysfunction-associated Steatohepatitis (MASH): 81%</li> </ul>	<ul style="list-style-type: none"> <li>• Idiopathic Pulmonary Fibrosis: 34%</li> <li>• Chronic Obstructive Pulmonary Disease (COPD): 15%</li> </ul>	<ul style="list-style-type: none"> <li>• Valvular disease: 10%</li> <li>• Cardiomyopathy: 32%</li> </ul>



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## Transplanting Obese Patients

- Surgical/technical considerations
- Increase in inflammation and potential link to rejection
- Mobility post transplant
- Lack of standardization of BMI requirements
- Short term and long term morbidity and mortality
- Concern for resource utilization

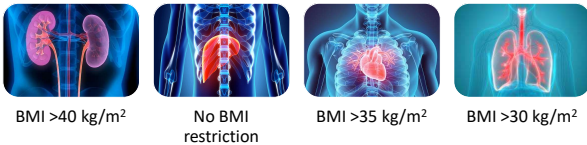
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## Transplant Center Specific Approach

- **American Society of Transplant Surgeons 2012 Kidney Transplant Survey:**
  - 66 of 67 centers had BMI criterion
  - Upper limit for evaluation: BMI 35-45 kg/m<sup>2</sup>
  - Inconsistent BMI for listing
- **Thomas Jefferson 2014 Liver Transplant Survey:**
  - » 46 centers
  - » 70.5% centers had BMI criterion
  - » 55% reported BMI cutoff of 45 kg/m<sup>2</sup>
  - » 25% of centers reported any BMI was acceptable

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## Transplanting Obese Patients- UCMC Limits



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## Obese Recipient Risk: Kidney Transplant

- Skin and soft tissue complications
- Anastomotic complications
- Delayed graft function
- Increased rejection
- Decreased graft survival
- Increased risk for sepsis, readmissions, new onset diabetes

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## Obese Recipient Risk: Liver Transplant

- Difficulty defining obesity with weight alone due to sarcopenia, fluid overload/ascites, and malnutrition
- BMI > 40 kg/m<sup>2</sup> → decreased 30 day, 1 year, and 2 year post operative survival
- Overweight and mild obesity → protective effect
- Higher risk of recurrent hepatocellular carcinoma

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## Obese Recipient Risk: Heart Transplant

- Decreased 1 and 5 year survival with BMI >35 kg/m<sup>2</sup>
- Increased risk of dialysis post transplant
- Increased risk of new onset diabetes, chronic dialysis, and post transplant coronary artery disease

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### Obese Recipient Risk: Lung Transplant

- Increased risk of primary graft dysfunction with BMI >30 kg/m<sup>2</sup>
- Increased risk of post transplant mortality with BMI > 30 kg/m<sup>2</sup>
  - 22% greater mortality rate compared to those of BMI 18.5-24.9 kg/m<sup>2</sup>
- Poorer long term outcomes with BMI > 35 kg/m<sup>2</sup>




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### Historical Approach to Obese Transplant Candidates

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    graph TD
      A[Pt referred to transplant center] --> B[IF BMI unacceptable: pt instructed to call for scheduling when BMI is within eval range]
      A --> C[IF BMI acceptable: eval scheduled]
      C --> D[Eval completed and pt instructed to lose weight & call back when BMI is below cutoff]
    
```



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### How Hard Is It to Lose Weight?


- 3-5% weight loss seen with lifestyle changes
- More than half of the weight is gained back in 2 years and 80% in 5 years



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### What Can We Offer These Patients?


- Referral to bariatric surgery
  - Only 1% of currently eligible population undergoes surgical treatment
  - Can consider at time of abdominal transplant
- Anti-obesity medications
  - Greater and more sustainable weight loss when paired with lifestyle modifications



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### Oral Anti-Obesity Medications


Medication	Drug Class	Indication	Dosing	Common Adverse Effects
Phentermine/topiramate extended release (Qysmia™)	Combination sympathomimetic amine anorectic/anti-epileptic analogue	Chronic weight management in adults with a BMI ≥30 kg/m <sup>2</sup> or ≥27 kg/m <sup>2</sup> in the presence of weight related comorbidity*	3.75 mg/23 mg capsules: 1 capsule PO daily x 14 days then titrate. Max dose 15 mg/92 mg PO daily	Paresthesia, dizziness, dysgeusia, insomnia, constipation, dry mouth
Naltrexone/bupropion extended release (Contrave™)	Combination opioid antagonist/aminoketone antidepressant	Chronic weight management in adults with a BMI ≥30 kg/m <sup>2</sup> or ≥27 kg/m <sup>2</sup> in the presence of weight related comorbidity*	8 mg/90 mg tablets: 1 tab PO daily x 1 week then titrate. Max dose 16 mg/180 mg PO twice daily.	Nausea, constipation, headache, vomiting, dizziness, insomnia, dry mouth, diarrhea
Orlistat (Xenical™ or Alli™)	Lipase inhibitor	Chronic weight management in adults with a BMI ≥30 kg/m <sup>2</sup> or ≥27 kg/m <sup>2</sup> in the presence of weight related comorbidity*	60 mg capsule or 120 mg capsule: 120-180 mg three times daily with meals that contain fat	Oily spotting, flatus with discharge, fecal urgency, fatty/oily stool



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### Oral Anti-Obesity Medications

- 3-10.8% total body weight loss seen with oral pharmacotherapy when partnered with lifestyle modifications
- Phentermine/topiramate shows greatest weight loss (~10%), but increased cardiovascular risk
- Unique patient populations from these agents can benefit beyond weight loss




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### Available GLP-1RAs

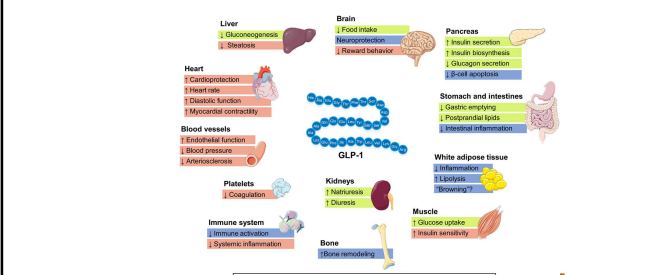

- Exenatide (Byetta®)
- Dulaglutide (Trulicity®)
- Liraglutide (Saxenda®)\*
- Semaglutide (Ozempic®, Wegovy®\*, Rybelsus®)
- Tirzepatide (Mounjaro®)

\*approved for weight loss



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### Benefits of GLP-1RA Pharmacotherapy





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### Liraglutide

- Dose titration every week
- Contraindications:
  - Personal or family history of medullary thyroid carcinoma
  - Patients with Multiple Endocrine Neoplasia syndrome type 2


Medication	Available Doses and Frequency	Indication
Liraglutide (Saxenda®)	0.6, 1.2, 1.8, 2.4, 3.0 mg SQ; given once daily	Chronic weight management
Liraglutide (Victoza®)	0.6, 1.2, 1.8 SQ; given once daily	Type 2 diabetes



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### Data Supporting Use

Source	Design and Study Population	Results
Pi-Sunyer et al. 2015 (SCALE)	<ul style="list-style-type: none"> <li>• Double blinded, randomized 2:1</li> <li>• 3731 pts with BMI ≥ 30 kg/m<sup>2</sup> OR BMI ≥ 27 kg/m<sup>2</sup> + one comorbidity</li> <li>• 56 weeks of liraglutide 3.0 mg q day vs placebo</li> </ul>	<ul style="list-style-type: none"> <li>• Mean change in body weight from baseline to week 56 was -8% in the lira group vs. -2.6% with placebo</li> <li>• Percent of pre-diabetics found in the lira group after 56 weeks was 30.8% &amp; the percent of pre-diabetics found in the placebo group after 56 weeks was 67.3%</li> </ul>




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### Semaglutide

- Dose titration every 4 weeks
- Use in caution in patients with history of pancreatitis
- Contraindications:
  - Personal or family history of medullary thyroid carcinoma
  - Patients with Multiple Endocrine Neoplasia syndrome type 2


Medication	Available Doses and Frequency	Indication
Semaglutide (Ozempic®)	0.25, 0.5, 1, 2 mg SQ; given every 7 days	Type 2 Diabetes
Semaglutide (Wegovy®)	0.25, 0.5, 1, 1.7, 2.4 mg SQ; given every 7 days	Chronic weight management
Semaglutide (Rybelsus®)	3, 7, 14 mg PO; given daily	Type 2 Diabetes



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### Semaglutide Data

Source	Design and Study Population	Results
Wilding et al. 2021 (STEP 1)	<ul style="list-style-type: none"> <li>• Double blinded, randomized 2:1</li> <li>• 1961 pts with BMI ≥ 30 kg/m<sup>2</sup></li> <li>• 68 weeks of semaglutide 2.4 mg q week vs placebo</li> </ul>	<ul style="list-style-type: none"> <li>• Mean change in body weight from baseline to week 68 was -14.9% in the sema group vs. -2.4% with placebo</li> <li>• Sema group with greater improvement in cardiometabolic risk factors and self-reported physical function</li> </ul>
Davies et al. 2021 (STEP 2)	<ul style="list-style-type: none"> <li>• Double blinded, randomized 2:1</li> <li>• 1210 pts with BMI ≥ 27 kg/m<sup>2</sup> AND type 2 diabetes</li> <li>• 68 weeks of semaglutide 2.4 mg q week vs semaglutide 1.0 mg q week vs placebo</li> </ul>	<ul style="list-style-type: none"> <li>• Mean weight change was -9.6% in sema 2.4 mg vs. -7.0% vs. -3.4% in placebo group</li> <li>• More patients on sema 2.4 mg than sema 1.0 achieved slightly better glycaemic control, reductions in cardiometabolic risk, and improved physical function</li> </ul>
Wadden et al. 2021 (STEP 3)	<ul style="list-style-type: none"> <li>• Double blinded, randomized 2:1</li> <li>• 611 pts with BMI ≥ 30 kg/m<sup>2</sup> OR BMI ≥ 27 kg/m<sup>2</sup> + one comorbidity</li> <li>• 68 weeks of semaglutide 2.4 mg q week vs placebo + low calorie diet + intensive behavioral therapy</li> </ul>	<ul style="list-style-type: none"> <li>• Average weight reduction was 16.0% with sema vs. 5.7% with placebo</li> <li>• At least a 5% reduction in bodyweight was met by 86.6% (sema) versus 47.6% (placebo).</li> </ul>
Rubino et al. 2021 (STEP 4)	<ul style="list-style-type: none"> <li>• Double blinded, randomized</li> <li>• 803 pts with BMI ≥ 30 kg/m<sup>2</sup> OR BMI ≥ 27 kg/m<sup>2</sup> + one comorbidity</li> <li>• 20 weeks of semaglutide 2.4 mg q week then randomized 2:1 to 48 weeks of continued semaglutide vs placebo</li> </ul>	<ul style="list-style-type: none"> <li>• Patients lost average of 10.6% of weight in first 20 weeks</li> <li>• Pts who continued on sema after randomization lost an additional 7.9% of their bodyweight, on average, to give a total 17.4% weight loss over the whole trial, whereas those who switched to placebo regained an average 6.9%, giving a total weight loss of 5.0%.</li> </ul>




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### Semaglutide Data cont.

Source	Design and Study Population	Results
Garvey et al. 2022 (STEP 5)	<ul style="list-style-type: none"> <li>Double blinded, randomized 2:1</li> <li>304 pts with BMI ≥ 30 kg/m<sup>2</sup> OR BMI ≥ 27 kg/m<sup>2</sup> + one comorbidity</li> <li>104 weeks of semaglutide 2.4 mg q week vs placebo</li> </ul>	<ul style="list-style-type: none"> <li>Mean change in body weight from baseline to week 104 was -15.2% in the sema group vs -2.6% with placebo</li> <li>Demonstrated weight loss was seen through week 60, and then maintained until week 104</li> </ul>
Kadowaki et al. 2022 (STEP 6)	<ul style="list-style-type: none"> <li>Double blinded, randomized 2:1</li> <li>401 Asian pts with BMI ≥ with BMI ≥ 35 kg/m<sup>2</sup> with one comorbidity OR BMI ≥ 27 kg/m<sup>2</sup> + two comorbidities</li> <li>68 weeks of semaglutide 2.4 mg q week vs semaglutide 1.7 mg q week vs placebo</li> </ul>	<ul style="list-style-type: none"> <li>Mean weight change was -13.2% in sema 2.4 mg vs -9.6% vs -2.1% in placebo group</li> <li>Sema associated with significant reduction in abdominal visceral fat and a significant reduction in hemoglobin A1c in patients with diabetes</li> </ul>
Rubino et al. 2023 (STEP 8)	<ul style="list-style-type: none"> <li>Open-label, double-blinded, randomized 3:1</li> <li>338 pts with BMI ≥ 30 kg/m<sup>2</sup> OR BMI ≥ 27 kg/m<sup>2</sup> + one comorbidity</li> <li>68 weeks of semaglutide 2.4 mg q week vs liraglutide 3.0 once daily</li> </ul>	<ul style="list-style-type: none"> <li>Mean weight change was 15.8% with sema vs 6.4% with liraglutide</li> <li>Higher rates of discontinuation in liraglutide (12.6%) vs. sema (3.2%) vs. placebo (3.5%)</li> </ul>

**SELECT trial not yet published but reported 20% reduction in risk of major cardiovascular events**




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### Tirzepatide Data

- Dose titration every 4 weeks
- Use in caution in patients with history of pancreatitis
- Contraindications:
  - Personal or family history of medullary thyroid carcinoma
  - Patients with Multiple Endocrine Neoplasia syndrome type 2


Medication	Available Doses and Frequency	Indication
Tirzepatide (Mounjaro®)	2.5, 5, 7.5, 10, 12.5, 15 mg SQ; given every 7 days	Type 2 diabetes
Tirzepatide (brand name pending)	5, 10, 15 mg SQ; given every 7 days	Pending FDA approval



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### Tirzepatide Data


Source	Design and Study Population	Results
Jastreboff et al. 2022 (SURMOUNT 1)	<ul style="list-style-type: none"> <li>Double blinded, randomized 1:1:1:1</li> <li>2539 pts with BMI ≥ 30 kg/m<sup>2</sup> OR BMI ≥ 27 kg/m<sup>2</sup> + one comorbidity</li> <li>72 weeks of tirzepatide 5 mg vs 10 mg vs 15 mg q week vs placebo</li> </ul>	<ul style="list-style-type: none"> <li>Mean change in body weight from baseline to week 72 was -15.0% (5 mg), -19.5% (10 mg), and -20.9% (15 mg) tirzepatide group vs -3% with placebo</li> <li>Co-primary endpoint of the proportion of people attaining at least a 5% reduction in their baseline bodyweight: 85% (5 mg), 89% (10 mg), and 91% (15 mg) versus 35% (placebo)</li> </ul>
Garvey et al. 2023 (SURMOUNT 2)	<ul style="list-style-type: none"> <li>Double blinded, randomized 1:1:1:1</li> <li>938 pts with type 2 diabetes AND BMI ≥ with BMI ≥ 35 kg/m<sup>2</sup> with one comorbidity OR BMI ≥ 27 kg/m<sup>2</sup> + one comorbidity</li> <li>72 weeks of tirzepatide 10 mg vs 15 mg q week vs placebo</li> </ul>	<ul style="list-style-type: none"> <li>Mean weight change was -12.8% (10 mg) vs -14.7% (15 mg) vs -3.2% in placebo group</li> <li>Co-primary endpoint of the proportion of people attaining at least a 5% reduction in their baseline bodyweight: 79% (10 mg), and 83% (15 mg) versus 32% (placebo)</li> </ul>



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### GLP1RA Trials Summary


- Greatest medication-assisted weight loss seen
- Varying degrees of weight loss seen (8-25%) with different agents
- Trials did not include patients on dialysis or with chronic end stage organ disease
- Majority of trials include mostly Caucasian and female patients (~70%)
- More data needed comparing GLP1RAs



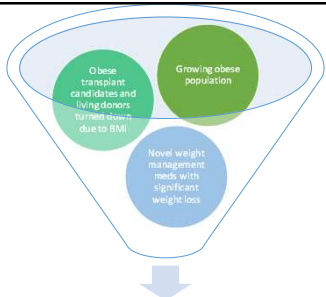
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### Clinical Approach to Obesity


- The Obesity Society/American College of Cardiology/American Heart Association joint guidelines last published in 2014
- Many other organizations publishing guidelines: American Association of Clinical Endocrinologists, American Gastroenterological Association
- All obese patients: comprehensive lifestyle intervention program
- Pharmacological intervention indicated BMI ≥ 35 kg/m<sup>2</sup>
- Bariatric procedures for pts with a BMI ≥ 40 kg/m<sup>2</sup> or a BMI ≥ 35 kg/m<sup>2</sup> with weight-related complications



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The birth of a transplant weight loss clinic

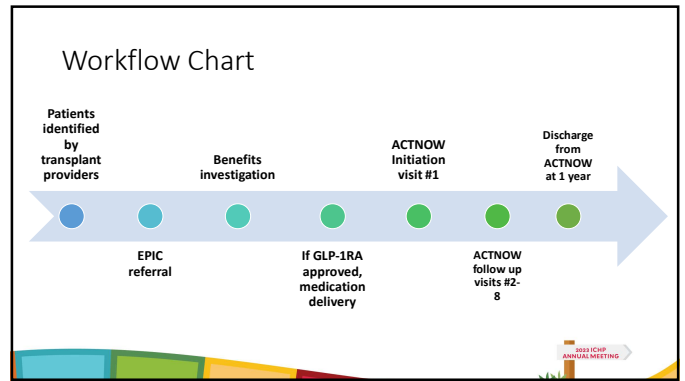


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**Access to Transplant through Novel Approaches to Weight Loss (ACTNOW) Clinic: March 2023**



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### Patient Selection

Appropriate Patient Population	Excluded Patients
<ul style="list-style-type: none"> <li>Patients in need of an organ an unacceptable BMI For surgery</li> <li>Lung: BMI &gt; 30 kg/m<sup>2</sup></li> <li>Kidney: BMI &gt; 40 kg/m<sup>2</sup></li> <li>Heart: BMI &gt;35 kg/m<sup>2</sup></li> <li>Pancreas/islet: BMI &gt;32 kg/m<sup>2</sup></li> <li>Liver: surgeon discretion</li> </ul>	<ul style="list-style-type: none"> <li>Pts w/ incomplete psychosocial and medical work up</li> <li>Pts w/ malnutrition</li> <li>Pts already on GLP-1RAs</li> <li>Pts w/ personal or family history of medullary thyroid carcinoma, multiple endocrine neoplasia syndrome type 2</li> </ul>

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### Referral & Benefits Investigation

- Referral made by transplant team after transplant work up is complete
- GLP-1RA coverage checked prior to first visit done by specialty pharmacist
  - Ensure coverage of induction + maintenance dosing
  - Prior authorization + appeal attempted
  - Assessment of financial assistance needs
- Patients only scheduled if active coverage for GLP-1RAs and receive med prior to visit

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### ACTNOW Visit #1

<b>NP visit</b>	<ul style="list-style-type: none"> <li>Physical exam</li> <li>Medical and family history</li> <li>Assessment of readiness and motivation</li> </ul>
<b>PharmD Visit</b>	<ul style="list-style-type: none"> <li>Medication counseling (expectations, ADRs, administration)</li> <li>Movement counseling</li> </ul>
<b>RD visit</b>	<ul style="list-style-type: none"> <li>Assessment of eating habits</li> <li>Individualized dietary modification counseling</li> </ul>

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### Lifestyle Modifications

- Movement goals
  - Assess starting point
  - Attainable, modified goals
- Dietary goals
  - Access to food
  - Mediterranean diet
  - Protein supplements



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**Social Resistance Routine**

**Visit Topic List**

- 1 Medication Diet
- 2 The Power of Protein
- 3 Grocery Store On the Go Guide
- 4 Eating the Rainbow: How to add more fruits/vegetables
- 5 Proper Portion Control
- 6 Exercise for Energy
- 7 Maintenance Mode

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### Follow Up Visits

Visit Number	Week since Initiation	Scheduled Appointments
Visit #2	Week 4	Virtual: PharmD, RD
Visit #3	Week 8	Virtual: PharmD, RD
Visit #4	Week 12	In person: NP, PharmD, RD
Visit #5	Week 24	In person: NP, PharmD, RD
Visit #6	Week 36	In person: NP, PharmD, RD
Visit #7	Week 52	In person: NP, PharmD, RD

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### PharmD Specific Visits

- Assessment of adverse effects
- Adherence
- Changes in concurrent medications
- Dose titration
- Goal setting

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### Results to Date: Patient Population

- Referrals: 37
- Active patients: 22

Organ System	Percentage
LUNG	45.3%
KIDNEY	38.4%
HEART	13.6%
PANCREAS	2.3%

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### Results to Date: Medication Access

**Medication Approval Process:**

Approval Status	Count
Approved with prior authorization	18
Prior authorization denied and approved	4
Prior authorization denied, 1st time approved	0

**Insurance Type:**

Insurance Type	Count
Private Insurance	12
Medicaid	4
Medicare	2
Other	1

**GLP1RA Selected:**

Medication	Percentage
Semaglutide	52.3%
Tirzepatide	22.7%
Liraglutide	25%

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### Results to Date: Weight Loss

- First patient seen 3/24/2023
- Of the 12 patients who have completed at least 8 weeks of ACTNOW, average weight loss is 14.2 lbs. (ranging from 5-23 lbs.)
- All patients are losing weight
- No discontinuations
- 3 patients have reach goal weight and 2 patients subsequently **listed!**

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## Potential Limitations of Clinic

- Formulary changes
- Equal access across insurance providers?
- Therapy continuation peri-transplant?
- Transitions of care when discharging from ACTNOW

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## Future Endeavors

- Expanding access to living donors
- Chicagoland outreach
- Potential partnerships with GLP-1 manufacturer to expand access
- Publish ACTNOW data

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## Conclusions

- Obesity is a growing epidemic that poses significant problems to the pre-transplant population
- Obesity and high BMIs limit patients' access to transplant
- GLP1RAs provide significant weight management benefits compared to conventional therapy and weight loss benefits vary dependent on selected agent
- The ACTNOW Clinic is an innovative service that expands access to transplant to obese patients with end-stage organ disease

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## Case Study

BG is a 67 yo M with a PMH of ILD 2/2 hypersensitivity pneumonitis, OSA, and osteopenia. He requires 6L of oxygen at rest. Pertinent labs and vitals are as follows:

- HgbA1c: 5.2%
- Total Cholesterol 95, HDL 29, LDL 52
- Weight: 215 lbs
- Body Mass Index (BMI): 33.81 kg/m<sup>2</sup>

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## Case Study, cont.

BG is being considered for lung transplant. What currently precludes him from transplant?

- a. His oxygen requirement
- b. His diagnosis of osteopenia
- c. His age
- d. His BMI

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## Post-Test Question #1

Which of the following is true?

- a. There is a standard BMI cutoff for all transplant centers for each organ transplant.
- b. All organ transplants (i.e. lung, heart, kidney) use the same BMI cutoff.
- c. Each transplant center and transplant organ group within that center select their BMI restriction criteria.

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### Post-Test Question #2

Match the appropriate weight management therapy with the expected weight loss:

- a. Liraglutide, 18%
- b. Semaglutide, 15%
- c. Naltrexone/bupropion extended release, 12%
- d. Tirzepatide, 8%

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### Post-Test Question #3

What is a potential barrier to establishing transplant weight loss clinics?

- a. Patient willingness to be on a lifelong medication for weight management
- b. Insurance coverage
- c. Clinic and staff availability
- d. All of the above

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**Questions?**

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**AT THE FOREFRONT**  
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