



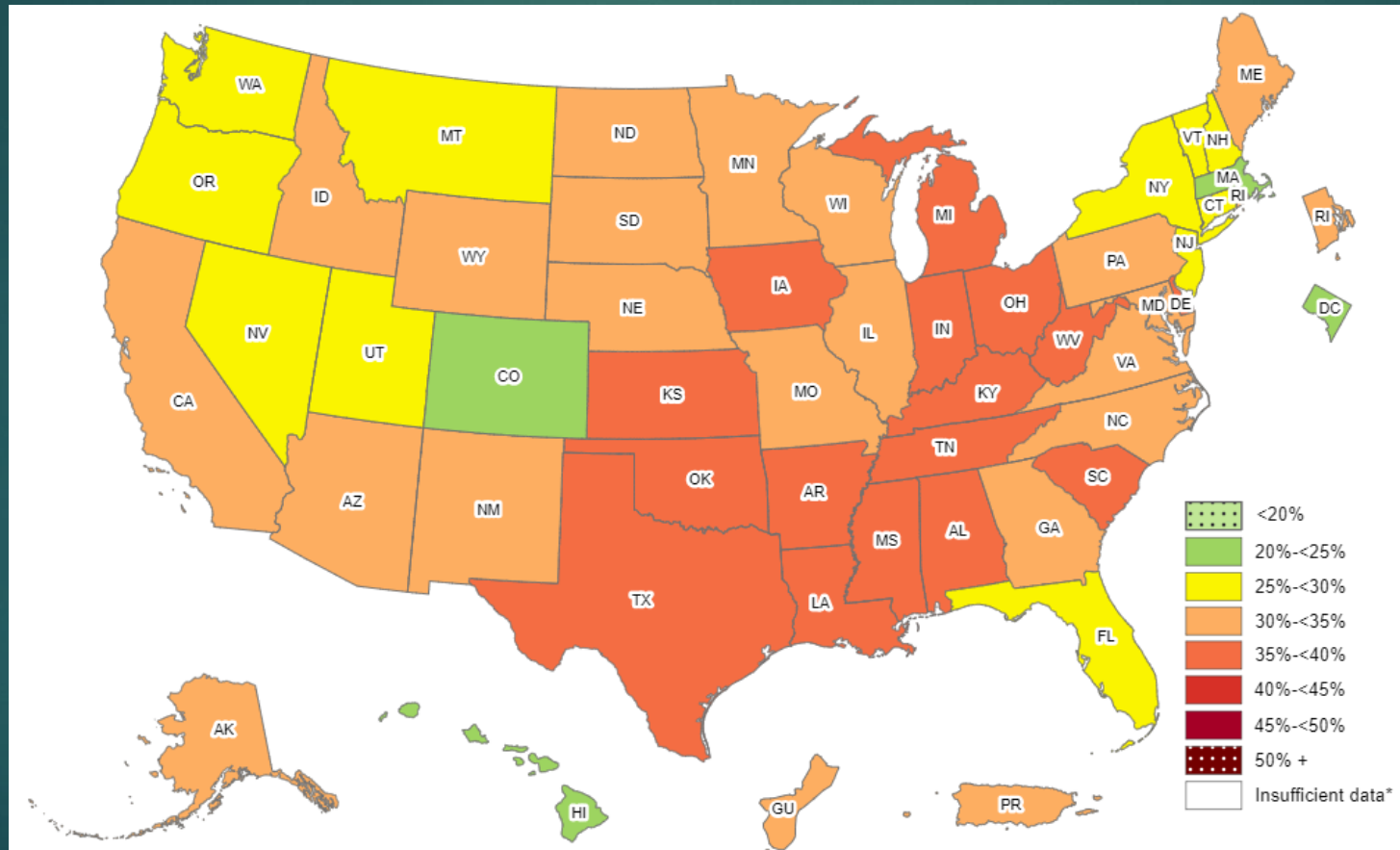
# Bariatric Surgery in Children: Who, What and When?

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# The Ongoing Epidemic



## Obesity Trends\* Among U.S. Adults BRFSS, 2020



Source: Behavioral Risk Factor Surveillance System, CDC

# Bariatric Surgery: Who is eligible?

- Patients who want it
- Age  $\geq$  13 years
- Morbid obesity
- Obesity-related co-morbidities

# Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents With Obesity



“Pediatricians and other PHCPs should offer referral for adolescents 13 and older with severe obesity for evaluation for metabolic and bariatric surgery to local or regional comprehensive multidisciplinary pediatric metabolic and bariatric surgery centers.”

# Insurance Eligibility

- BMI > 40 kg/m<sup>2</sup>
- BMI > 35 kg/m<sup>2</sup> + obesity-related co-morbidities
- BMI > 140% of the 95<sup>th</sup> percentile
- BMI > 120% of the 95<sup>th</sup> percentile + obesity-related co-morbidities

# Obesity-Related Co-Morbidities

- ❑ Obstructive sleep apnea
- ❑ Type 2 diabetes
- ❑ NAFLD/NASH
- ❑ Cardiovascular disease
- ❑ GERD
- ❑ Idiopathic intracranial hypertension

# Preoperative Process

Six (consecutive monthly counseling sessions)

-Nutrition

-Exercise

-Lifestyle changes

Surgical consultation

-Surgical options

-Complications

-Follow-up

-Alternatives

Nutrition

-Diet changes

-MRT

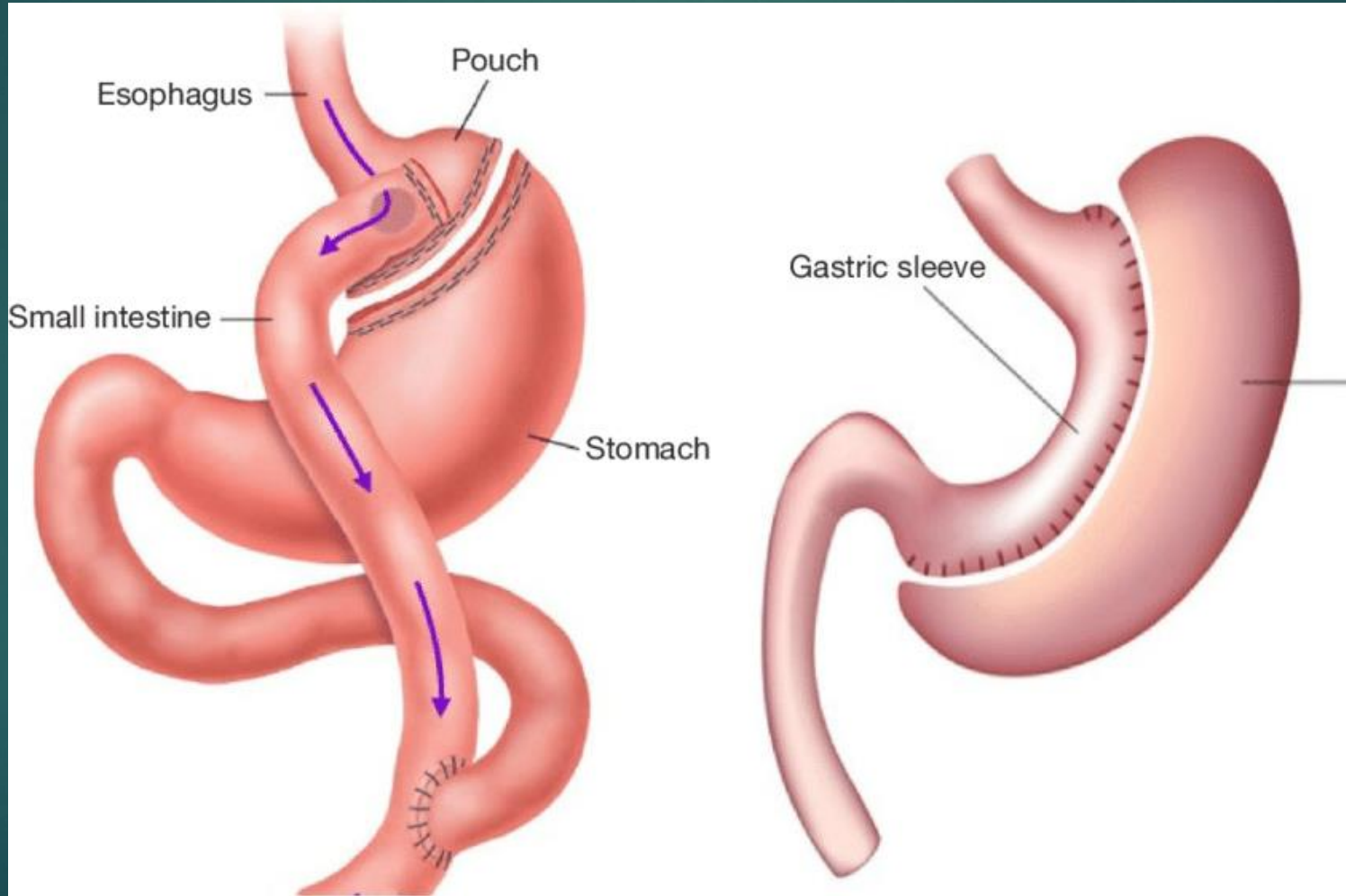
Psychology

-Mental health exam

# Surgical Treatments

Roux-en-Y gastric bypass

Sleeve gastrectomy

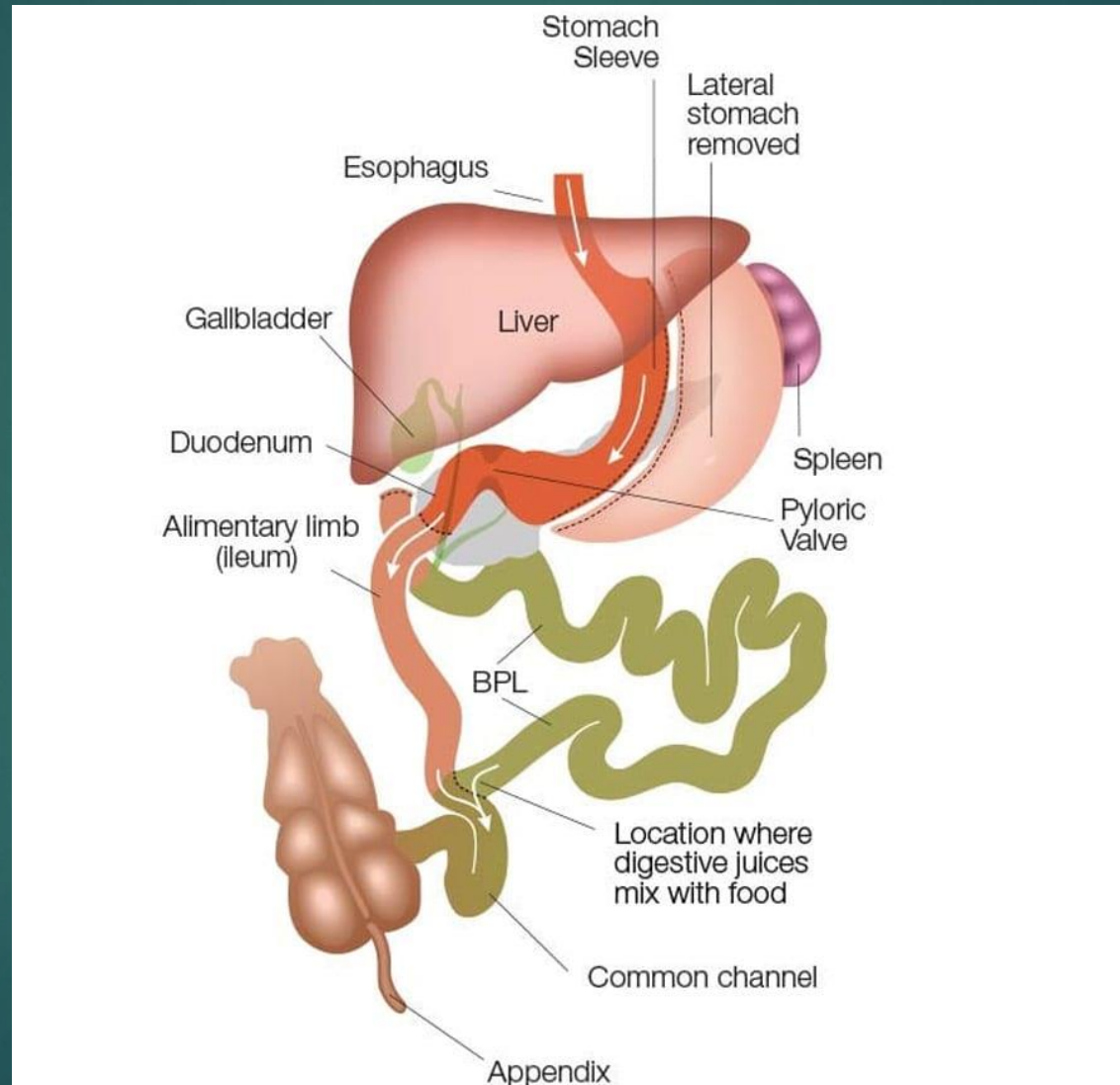




# Why is sleeve gastrectomy preferred?

- Quicker recovery
- Lower complication rate
- Excellent overall outcomes
- Lower likelihood of vitamin deficiencies
- Preferred for “follow-up gap”
- Preserves additional surgical treatment options

# Duodenal Switch



# Ten-Year Outcomes of Children and Adolescents Who Underwent Sleeve Gastrectomy: Weight Loss, Comorbidity Resolution, Adverse Events, and Growth Velocity



- Retrospective assessment of prospectively-collected database
- Single, large academic medical center
- N = 2504
- Years: 2008-2021
- All patients underwent laparoscopic sleeve gastrectomy

# Study Population

- Mean age:  $15.7 \pm 3.7$  years
- M:F = 45%:55%
- Mean pre-op BMI  $44.8 \pm 12.6$  kg/m<sup>2</sup>
- Mean BMI percent = 165% of the 95<sup>th</sup> percentile

# Weight Loss Results

Variable	Baseline	1-3 years	4-6 years	7-10 years
Patients, n (%)	2504 (100)	1811 (88.3)	932 (73.5)	559 (88.4)
BMI, kg/m <sup>2</sup> , mean $\pm$ SD	44.8 $\pm$ 12.6	29.7 $\pm$ 7.2	30.5 $\pm$ 7.1	31.8 $\pm$ 8.2
%EWL, mean $\pm$ SD		82.3 $\pm$ 20.5	76.3 $\pm$ 29.1	71.1 $\pm$ 26.9

# Resolution of Comorbidities

<b>Comorbidity</b>	<b>Baseline (% prevalence)</b>	<b>&gt;7 years (% resolution)</b>
Type 2 diabetes	10.5	71.5
Dyslipidemia	9.1	57.3
Hypertension	15.1	58.1

# Postoperative Complications

**Table 4.** Adverse Events Observed in Children and Adolescents Who Underwent Laparoscopic Sleeve Gastrectomy

<b>Event</b>	<b>n</b>	<b>%</b>	<b>Management</b>
Staple line leak	2	0.09	Conservative management; revision to Roux-en-Y gastric bypass
Metabolic neuropathy	3	0.1	IV thiamine, long-term thiamine supplementation
Nausea and vomiting	22	1.0	Analgesia, proton pump inhibitor, IV rehydration

## Roux-en-Y Gastric Bypass Versus Sleeve Gastrectomy in Young Adults: a Dutch Registry Study

- Retrospective assessment of prospectively-collected database
- National study
- N = 231
- Ages 18-25
- Years: 2015-2019



# Study Population

	<b>RYGB, n = 1246</b>	<b>SG, n = 1067</b>	<b>P</b>
Age (years, $\pm$ SD)	23.1 $\pm$ 2.0	22.9 $\pm$ 2.1	0.002
Female (%)	86.1	86.7	0.687
Preoperative BMI (kg/m <sup>2</sup> $\pm$ SD)	44.1 $\pm$ 4.7	45.3 $\pm$ 5.1	< 0.001
Preoperative comorbidities, no. (5)			
Type 2 Diabetes	56 (4.5)	30 (2.8)	0.033
Hypertension	67 (5.4)	52 (4.9)	0.585
Dyslipidemia	88 (7.1)	29 (2.7)	< 0.001
GERD	102 (8.2)	71 (6.7)	0.163
OSA	60 (4.8)	46 (4.3)	0.563
Musculoskeletal pain	431 (34.6)	311 (29.1)	0.005

# Weight Loss Results

	<b>RYGB</b>		<b>SG</b>		<b>P</b>
	No.	% ± SD	No.	% ± SD	
TWL 1 year	1246/1246	34.3 ± 7.3	1067/1067	31.9 ± 8.5	< 0.001
TWL 2 years	583/971	35.0 ± 8.3	542/835	32.1 ± 10.0	< 0.001
TWL 3 year	331/751	33.1 ± 9.2	265/575	29.8 ± 11.5	< 0.001
TWL 4 year	185/528	30.9 ± 10.4	113/302	29.9 ± 12.9	0.521
TWL 5 year	78/262	29.5 ± 11.2	33/110	26.5 ± 15.1	0.307

# Resolution of Comorbidities

	<b>RYGB</b>	<b>(1-2 yrs f/u)</b>		<b>SG</b>	<b>(1-2 yrs f/u)</b>		<b>P</b>
	No.	Resolved or improved, no. (%)	Unchanged or worsened, no. (%)	No.	Resolved or improved, no. (%)	Unchanged or worsened, no. (%)	
T2DM	37/56	31 (83.8)	6 (16.2)	20/30	20 (100.0)	0 (0)	0.081
HTN	55/67	47 (85.5)	8 (14.5)	39/52	37 (94.9)	2 (5.1)	0.187
Dyslipidemia	69/88	58 (84.1)	11 (15.9)	19/29	16 (84.2)	3 (15.8)	1.000
GERD	62/102	59 (95.2)	3 (4.8)	32/71	18 (56.3)	14 (43.8)	<0.001
OSA	35/60	28 (80.0)	7 (20.0)	19/46	15 (78.9)	4 (21.1)	1.000
MS Pain	306/431	261 (85.3)	45 (14.7)	171/311	146 (85.4)	25 (14.6)	0.980

# Complication Rates

	RYGB, n = 1246	SG, n = 1067	p-value
<i>Perioperative complications, no. (%)</i>			
Perforation	1 (0.1)	0 (0)	NA
Bleeding	4 (0.3)	2 (0.2)	NA
Spleen injury	1 (0.1)	1 (0.1)	NA
Liver injury	1 (0.1)	1 (0.1)	NA
Total	10 (0.8)	7 (0.7)	0.681
<i>Number of readmissions within 30 days, no. (%)</i>	30 (2.4)	18 (1.7)	0.225
<i>Therapeutic intervention for complication within 30 days, no. (%)</i>	10 (0.8)	6 (0.6)	0.487
<i>Clavien-Dindo classification, no. (%)</i>			
CD grade I	7 (0.6)	7 (0.7)	0.771
CD grade II	8 (0.6)	8 (0.7)	0.755
CD grade III	14 (1.1)	9 (0.8)	0.499
CD grade IV	3 (0.2)	0 (0)	NA
<i>Postoperative complication within 30 days, no. (%)</i>			
Major bleeding	10 (0.8)	6 (0.6)	0.487
Anastomotic leakage	0 (0)	2 (0.2)	NA
Intra-abdominal abscess	0 (0)	1 (0.1)	NA
Wound infection	2 (0.2)	2 (0.2)	1.000
Intestinal obstruction	5 (0.4)	0 (0)	NA
Anastomotic stricture	1 (0.1)	1 (0.1)	1.000
Nonsurgical complications	15 (1.2)	18 (1.7)	0.329

# Who should get a gastric bypass?

- Patients who want it
- Severe GERD
- Weight regain after SG

# Bariatric Surgery Via HLC

- ❑ 5 sleeve gastrectomies performed
- ❑ Upcoming cases on April 20, May 18 and May 25
- ❑ Currently following 27 patients with interest in surgery
- ❑ 234 pounds lost to date



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