

Bariatric Surgery: Helping Providers Navigate the System Before and After Surgery

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Bariatric Surgery Webinar Part I
December 8, 2015

Webinar Series Objectives

Webinar #3
Advanced Bariatric Nutrition

Webinar #2
Early/Common Post-op Complications

Webinar #1
Understanding Bariatric Surgery Process

Objectives

- Overview of obesity management
- Understanding bariatric surgery process
- How to prepare your patients for surgery
- Resources/supports for providers and patients
- Questions and discussions

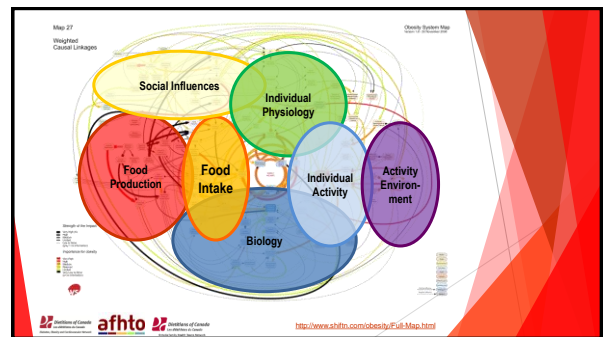
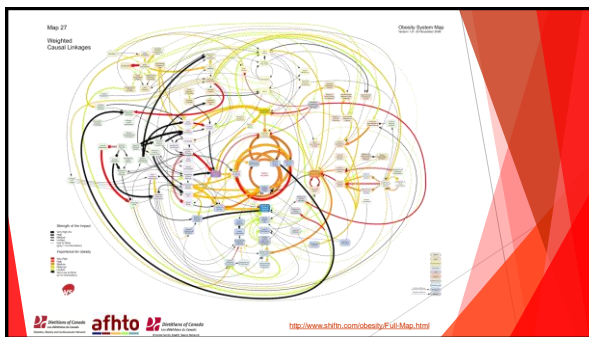
CMA recognizes obesity as a disease

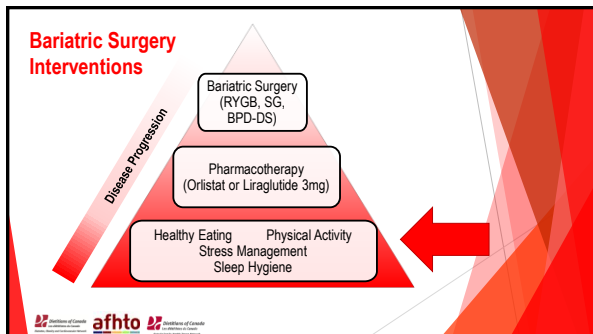
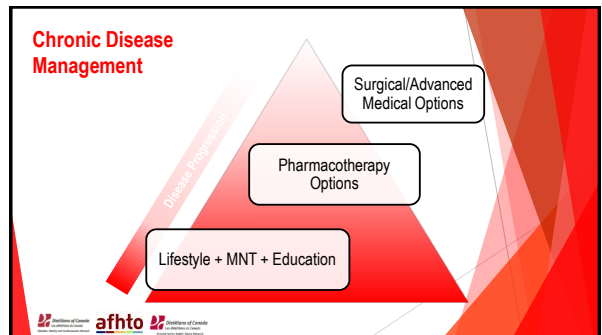
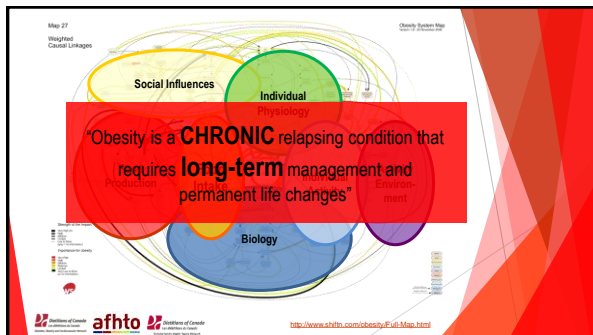


by Pat Rich

10/9/2015

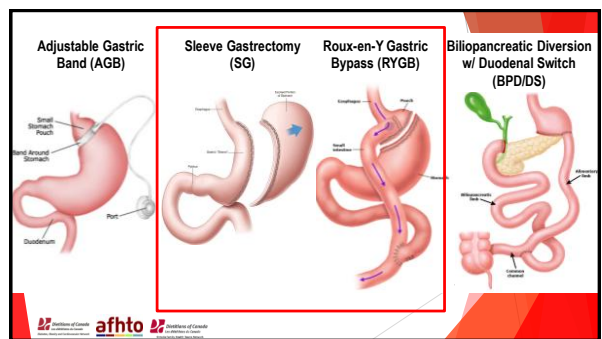
The Canadian Medical Association (CMA) has declared obesity to be a chronic medical disease requiring enhanced research, treatment and prevention efforts.





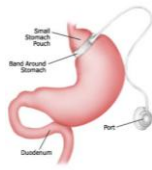
Michelle

- 37 yo female
- DMII; OSA; Dyslipidemia, HTN, Obesity; OA
- Wt: 282 lbs (128 kg) Ht: 170 cm
- BMI: 44.3 EOSS: stage 3
- Multiple attempts of losing weight (>20 yrs); wants to improve health, mobility and life expectancy for her kids.
- Asks you about bariatric surgery



Adjustable Gastric Band (Lap Band) Video:

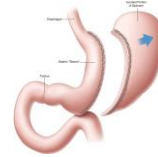
https://www.youtube.com/watch?v=5_Ef-2CBwk0



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Sleeve Gastrectomy Video:

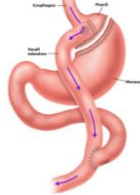
<https://www.youtube.com/watch?v=LdidwSBnDBs>



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Sleeve Gastrectomy Video:

<https://www.youtube.com/watch?v=F-p15pylbnI>



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Sleeve Gastrectomy Video:

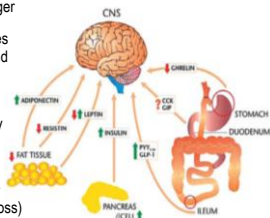
https://www.youtube.com/watch?v=ZG_3mJh0_5c



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Physiologic Changes: Post RYGB

- 1) Decreases hedonic hunger
- 2) Changes in gut hormones (ghrelin, PYY, GLP-1, and GIP/CCK)
- 3) Increase in energy expenditure post surgery
- 4) DM – insulin levels return to normal levels within days after surgery (independent of weight loss)



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Benefits of Bariatric Surgery

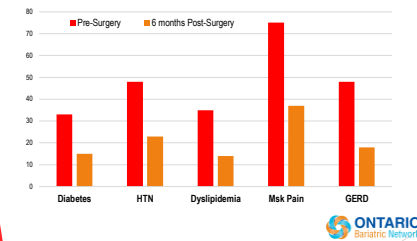
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Benefits of Bariatric Surgery (RYGB)

- Diabetes ↓ 84%
- Hypertension ↓ 68%
- Hyperlipidemia ↓ 97%
- Sleep Apnea ↓ 87%
- Mobility ↑↑↑
- QoL ↑↑↑
- Life Expectancy ↑ 5.8 yrs (m)
↑ 7.1 yrs (f)
- Weight Loss ↓ 20-35% total body weight

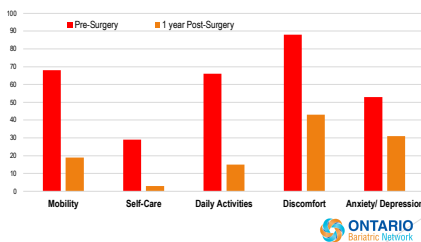
Reckward et al. 2004, 2008, 2011; 1724-1738
Popejoy et al. 2012; 140-148; 1721-1734-35
Anwar M. Shorrock, Yusuf S. et al. Registry data produced and distributed by the Population Health Research Institute and the Centre for Surgical Innovation and Innovation, 2015. Ontario, Canada: Registry.

Co-morbidity Improvements 6 months after RYGB



Anwar M. Shorrock, Yusuf S. et al. Registry data produced and distributed by the Population Health Research Institute and the Centre for Surgical Innovation and Innovation, 2015. Ontario, Canada: Registry.

QoL (EuroQoL 5D-5L) Improvements 1 year after RYGB



Anwar M. Shorrock, Yusuf S. et al. Registry data produced and distributed by the Population Health Research Institute and the Centre for Surgical Innovation and Innovation, 2015. Ontario, Canada: Registry.

Risks of Bariatric Surgery

Early Complications

- Bowel obstruction
- DVT
- GI/Intra-abdominal bleeding
- Leaks
- Pulmonary embolism
- Wound infection

Late Complications

- Anastomotic stricture
- Cholelithiasis
- Fistula
- Incisional hernia
- Marginal ulcer
- Nutrition deficiencies
- Weight regain / recurrence of comorbidities

Anwar M. Shorrock, Yusuf S. et al. Registry data produced and distributed by the Population Health Research Institute and the Centre for Surgical Innovation and Innovation, 2015. Ontario, Canada: Registry.

Access to Bariatric Surgery

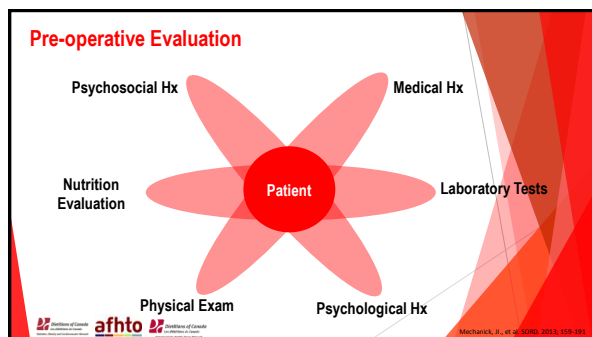
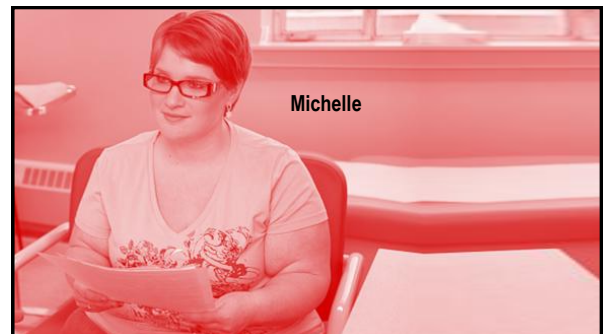
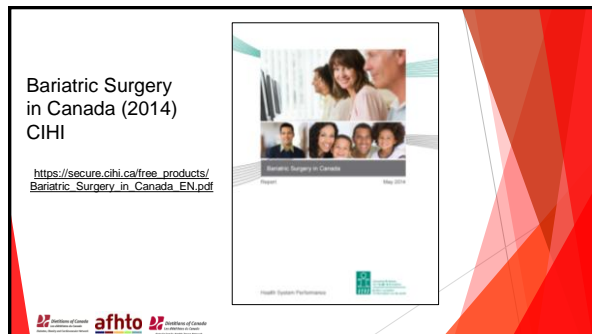
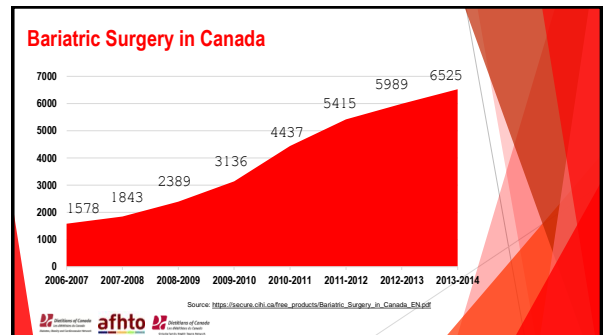
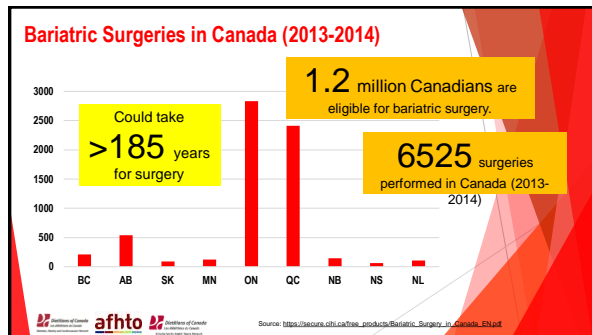
Eligibility

- > 18 years old
- BMI ≥ 40 or
- BMI ≥ 35 with at least one:
 - Coronary heart disease
 - Type II Diabetes mellitus
 - Hypertension
 - Diagnosed sleep apnea
 - Gastroesophageal reflux disease (GERD)

1 in 5 Canadian adults has obesity

Anwar M. Shorrock, Yusuf S. et al. Registry data produced and distributed by the Population Health Research Institute and the Centre for Surgical Innovation and Innovation, 2015. Ontario, Canada: Registry.

Source: https://secure.cib.ca/tes_products/Access_Surgery_in_Canada_2014.pdf



- ### Pre-operative testing:
- Routine blood work (includes micronutrients)
 - Diagnostic testing
 - Ultrasound
 - Upper gastrointestinal series
 - Gastroscopy
 - Colonoscopy
 - Pulmonary function tests
 - H. pylori bacteria test
 - Cardiac imaging
 - Cardiac stress test
 - Electrocardiogram
 - Sleep apnea study

Pre-operative Biochemistry Testing

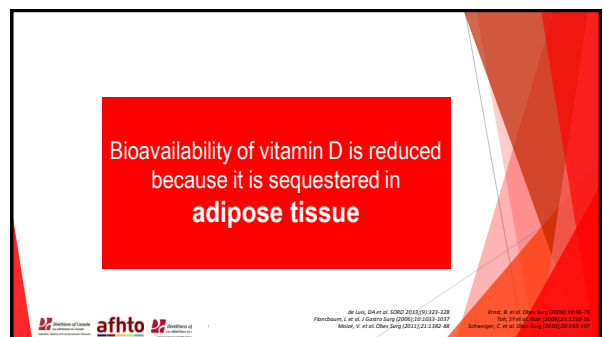
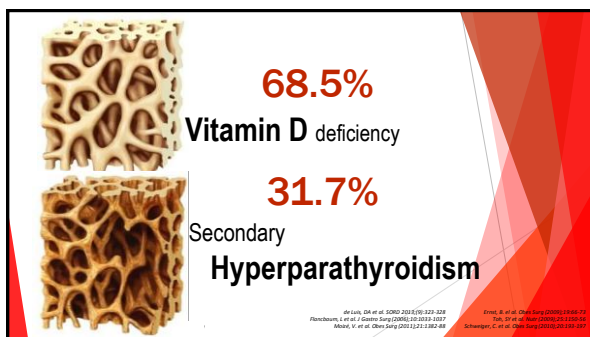
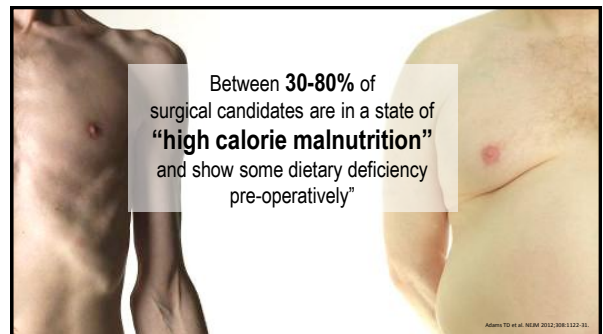
- CBC, platelets
- Electrolytes
- Glucose/Alc
- 25-hydroxyvitamin D
- Iron studies (TIBC, iron, ferritin)
- Serum vitamin B12
- Liver function tests
- Alkaline phosphatase, s. calcium
- Albumin
- Lipid profile
- Thiamine (B1)
- Folate
- PTH
- TSH
- Zinc
- Copper

Ineligibility (not limited to):


- Current drug or alcohol dependency (within 6 months of referral)
- Recent major cancer (life threatening, within last 2 years)
- Untreated or inadequately treated psychiatric illness

Delay/On-hold/Discharged:

- Untreated/unmanaged chronic conditions (i.e. diabetes >8.5%)
- Smoking
 - Must be smoke-free for 6 months prior to surgery and stay smoke free for life
- Compliance concerns (i.e. missed appointments)
- High risk for nutritional/behavioural complications



Up to **18.1%**
vitamin B12 deficient



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de Lencastre, J.M. et al. J. Clin. Endocrinol. 2010;102(10):3221-3228
Flombour, L. et al. J. Clin. Endocrinol. 2010;102(10):3221-3228
Mishra, V. et al. J. Clin. Endocrinol. 2010;102(10):3221-3228
Bouillon, B. et al. J. Clin. Endocrinol. 2010;102(10):3221-3228

Metformin affects the absorption of vitamin B12 in the ileum by antagonizing the calcium-dependent ileal membrane.

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Zinc deficiency

43.5%



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de Lencastre, J.M. et al. J. Clin. Endocrinol. 2010;102(10):3221-3228
Flombour, L. et al. J. Clin. Endocrinol. 2010;102(10):3221-3228
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Bouillon, B. et al. J. Clin. Endocrinol. 2010;102(10):3221-3228

Hyperinsulinemia associated with excessive urinary excretion of zinc

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12.8%
Iron deficiency anemia

9.5%
Iron deficiency



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de Lencastre, J.M. et al. J. Clin. Endocrinol. 2010;102(10):3221-3228
Flombour, L. et al. J. Clin. Endocrinol. 2010;102(10):3221-3228
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Bouillon, B. et al. J. Clin. Endocrinol. 2010;102(10):3221-3228

Inflammation associated with obesity induces production of hepcidin (a acute phase protein made in the liver), which blocks iron absorption in the intestine.

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Poor nutritional status in patients with obesity

Clinical **nutritional deficiencies** need to be **treated pre-operatively**

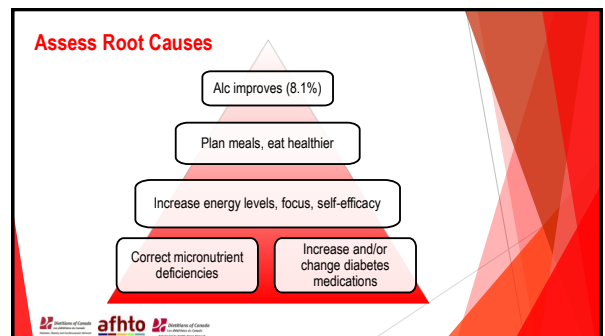
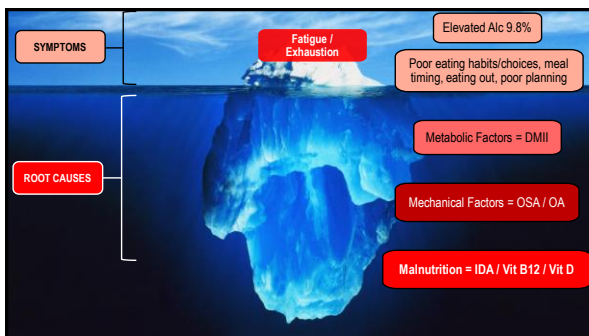
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Schwartz, C. et al. Ob Surg 2015;20:1334-2015
McNemar, L. et al. Ob Surg 2015;20:1334-2015



Michelle

- DMII; OSA; Dyslipidemia, HTN, Obesity; OA
- Wt: 282 lbs (128 kg) ht: 170 cm
- BMI: 44.3 EOSS: stage 3
- Laboratory findings:
 - Alc 9.8% (on Metformin + Glucophage)
 - Vitamin D 30 nmol/L
 - Vitamin B12 140 pmol/L MCV 94 fL
 - Ferritin 8 ug/L Hgb 104 g/L
- Difficulty planning meals/meal timing b/c of fatigue; eats out frequently; unhealthier options



Pre-operative Nutrition Suggestions

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Michelle

FHT RD identifies nutrition diagnosis:

- Altered nutrition-related laboratory values (IDA, vitamin B12, vitamin D)
- Undesirable food choices
 - High carbohydrate, low protein
 - Convenience/package foods
- Poor self-management

Screening for Iron Deficiency

- Blood loss (ulcer, heavy menstruation, etc), poor protein-rich food intake, vegetarian/vegan diet, difficulty taking supplements, interactions with food/medications/supplements
- Biochemistry values:
 - Ferritin (women <30 ug/L; men <50 ug/L)*
 - Low Hgb (women <120 g/L; men <130 g/L)
 - MCV (<80 fL)

IDA or ID should be optimized
BEFORE surgery.

Refer to PCP for further
evaluation and treatment

Managing Iron Deficiency Pre-operatively

- Ferrous gluconate (300 mg) – provides 35 mg elemental iron
- Take with vitamin C (250-500 mg)
- Avoid calcium-rich foods or supplements within 2 hours of iron
- Best before bed
- Gradual increase as tolerated (i.e. TID)

Treating Pre-operative Deficiencies

Suboptimal Vitamin B12 (TOH values = <133 pmol/L)

- Serum vitamin B12 < 300 pmol/L
- MCV borderline normal or >100 fL

Metformin, PPI's, Vegan/Vegetarian
diet, low dietary protein intake

Vitamin B12 po
500-1000 mcg/day
PCP to repeat in 3 mo

Suboptimal Vitamin D – 25 (OH) vitamin D

- <100 nmol/L = 1000 IU /day
- <50 nmol/L = 3000 IU/day

Check NAPRA website for
current vitamin D limits
(Difficulties scope of practice)

Consider Weight Effects When Selecting Antihyperglycemic Medications

Weight Gain	Weight Effect (kg)
Insulin	+4.5 to 5.0
Thiazolidenediones (TZDs)	+4.2 to 4.8
Sulfonylureas	+1.6 to 2.6
Meglitinides	+0.7 to 1.8
Weight Neutral or Decrease Weight	Weight Effect (kg)
Metformin	-4.6 to 0.4
α-Glucosidase inhibitors	+0.0 to 0.2
Dipeptidyl peptidase-4 (DPP-4) inhibitors	+0.0 to 0.4
Glucagon-like peptide-1 (GLP-1) receptor agonists	-1.3 to 3.0

Holender, P. Diabetes Spectrum 2010; 23(3): 159-165

Healthy Eating Behaviours

- Basic nutrition education/knowledge
- Eat 3 meals per day (MUST be eating breakfast)
- Balanced meals (protein + carbohydrates + fats)
- Protein needs are met (usually 60-100 grams/day)
- Fluid intake: 1.5-2L per day
- No caffeine, no carbonation, no alcohol (for life)
- Start vitamin D (1000 IU) and adult multivitamin
- Self-management (journaling, SMBG, pill box, ect)

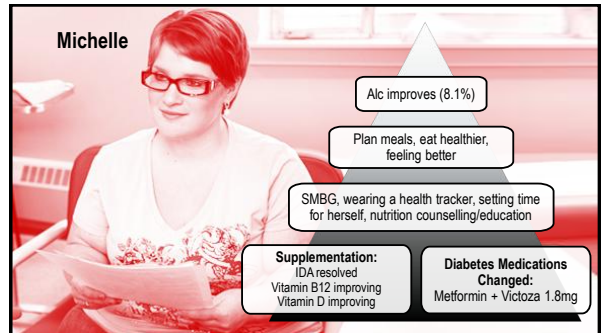
Habits/behaviours specific to surgery

- Eat a meal in 15-20 minutes
- Separate liquids from solid foods by 30 minutes after meals
- Chew slowly and cut foods into bit-size pieces
- Use a liquid meal replacements, high protein sparing diet or modified diet pre-op (varies across Canada)
- Self-management of health
 - Bring food, activity, blood sugar, mood records to appointments
 - Self-initiate learning (cooking, meal planning, grocery shopping)
 - Bring medications, supplements and NHP to appointments
 - Improve stress management and sleep hygiene

Nutritional Risks for Surgery RD's to assess

- Unrealistic **expectations**
- **Behaviour** changes, readiness, adherence
- **Micronutrient** deficiencies
- Inadequate **protein** intake
- Risk of **dehydration**
- Nutrition-related **medical** conditions

Michelle



Alc improves (8.1%)

Plan meals, eat healthier, feeling better

SMBG, wearing a health tracker, setting time for herself, nutrition counselling/education

Supplementation:
IDA resolved
Vitamin B12 improving
Vitamin D improving

Diabetes Medications Changed:
Metformin + Victoza 1.8mg

**Resources:
To support your patient**

Stay Connected

- OBN – PCP Online Registry
- Dietitians of Canada:
DOC Network
[Bariatric surgery subgroup](#)
- PEN – Bariatric Pathway
- DC – Learning on Demand
- Weight Management Dietetic Practice Group www.wmdpg.org

ONTARIO
Dietitians Network

Registration

Last Name:

First Name:

Title:

Work Email:

Phone:

City:

Province:

Country:

Professional Education/Training

www.obesitynetwork.ca – 5A's



Professional Education/Training

- Health at Every Size® www.sizediversityandhealth.org



- People First Language:
 - www.obesitynetwork.ca/people-first
 - www.uconn Ruddcenter.org/weight-bias-stigma
 - www.obesityaction.org/weight-bias-and-stigma/people-first-language-for-obesity





Take Home Messages

Key Messages

Obesity is a chronic disease

Surgical intervention is a TOOL

Patients are high risk for malnutrition

Assess ROOT causes and barriers

Stay connected & collaborate

Next Webinar.....Early/Common Post-op Complications

- Vitamin/mineral deficiencies
- Post-op supplement requirements
- Dietary habits post-op
- Inadequate protein intake
- Inadequate oral intake/dysphagia
- Excessive weight loss
- Nutrition requirements for surgical complications (strictures, fistula, internal hernia, bowel obstructions, etc).
- Practical case studies

Webinar #2: Jan. 11, 2016 Webinar #3: Feb. 1, 2016

Thank You Questions?

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