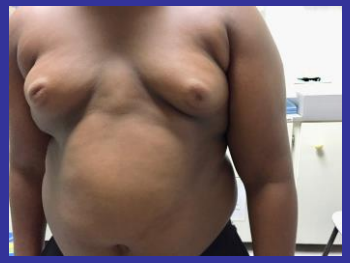

# Childhood Obesity

## An approach to management

M Anne St John MB. BS (UWI). FRCPC. FAAP. GCM

*Hon. Professor, Faculty of Medical Sciences, UWI Cave Hill Campus*
*Director Heart & Stroke Foundation of Barbados*

*BAMP-UWI CME Conference*

*Nov 18th, 2019, LESC*

## MULTIPLE CHOICE QUESTIONS- PRETEST

**Which are the recommended interventions related to overweight-obesity in children?**

a) 5 servings of fruit and vegetables per day
b) 4 servings of water
c) less than 2 hours of screen time
d) 1 hour minimum per day of moderate physical activity
e) all of the above

**Which factors play a role in childhood overweight - obesity in children?**

a) genetic factors
b) high intake of sugar sweetened beverages
c) high salt intake, foods high in cholesterol, trans fat and saturated fats
d) cultural factors
e) all of the above

# Outline

- **Definition**
- **The scope of the condition**
- **Complications**
- **Realities ans challenges experienced**
- **Recommended interventions -management**

**by the end of the session**

# Background: Obesity Epidemic

- The rise in obesity and associated co-morbidities one of the most challenging issues facing the medical and scientific community worldwide.
- adults (USA): >65% owt, >30% obese
- Shorter life span - current generation of children
- In 2016 the number of overweight children aged < 5 yrs, estimated as 41 million globally

- Almost 50% of overweight children aged <5yrs lived in Asia and 25% lived in Africa.

- Evidence of correlation from in utero..

»

- Strong evidence exists:
  - **Parent wt status**
  - **Risk of over-wt child**

- ***both parents normal wt = < 7%***
- ***1 parent over-wt = 40%***
- ***2 parents over-wt = 80%***

- ***For obese 3-5 yr olds, risk of obesity is increased from 24% with no obese parent to 62% with one obese parent***

- ***2/3 obese children >10 yrs, will be obese adults***

- **The World Health Organisation defines obesity**

- ***"a disorder in which excessive body fat has accumulated to such an extent as to adversely affect one's health."***

- **The most widely accepted definition of obesity in children :**

- **Body mass index (BMI) = wt (kg)/ht (m)squared**
- **( N = <25)**
-

- OVERWEIGHT: Children > the 85th percentile
- OBESITY: those > the 95th percentile

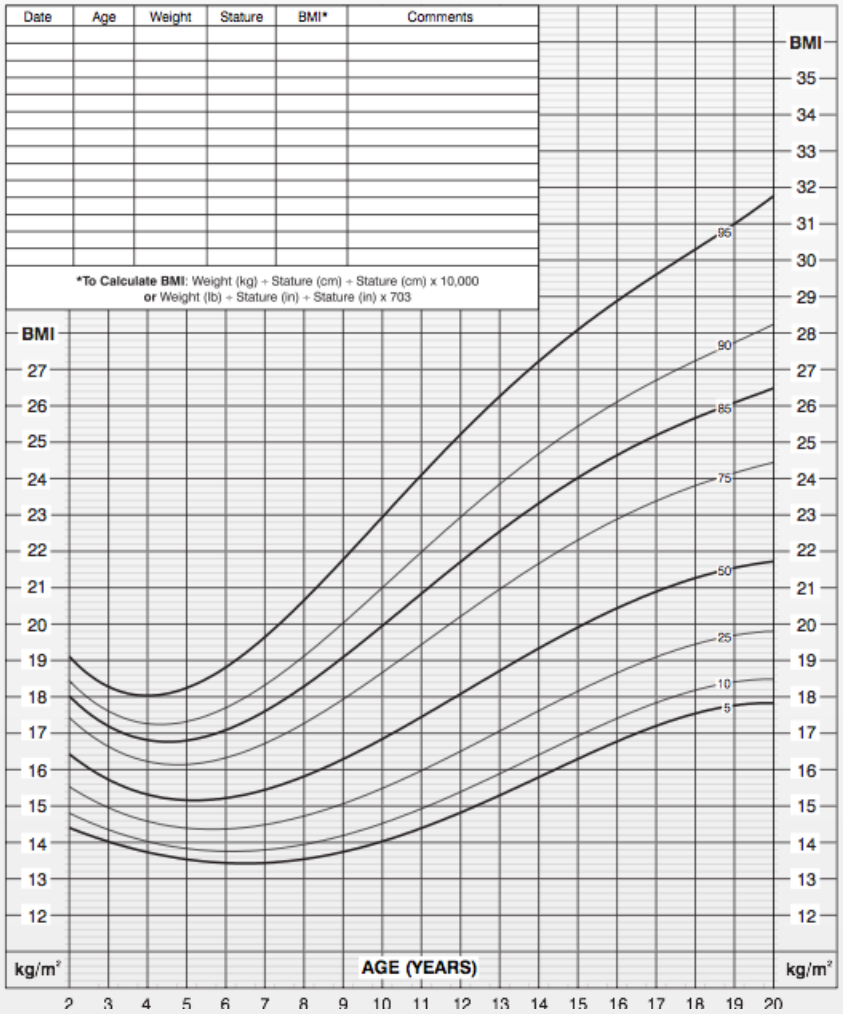
## 2 to 20 years: Girls
## Body mass index-for-age percentiles

NAME _____

RECORD # _____

| Date | Age | Weight | Stature | BMI* | Comments |
|---|---|---|---|---|---|
| | | | | | |

*To Calculate BMI: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703



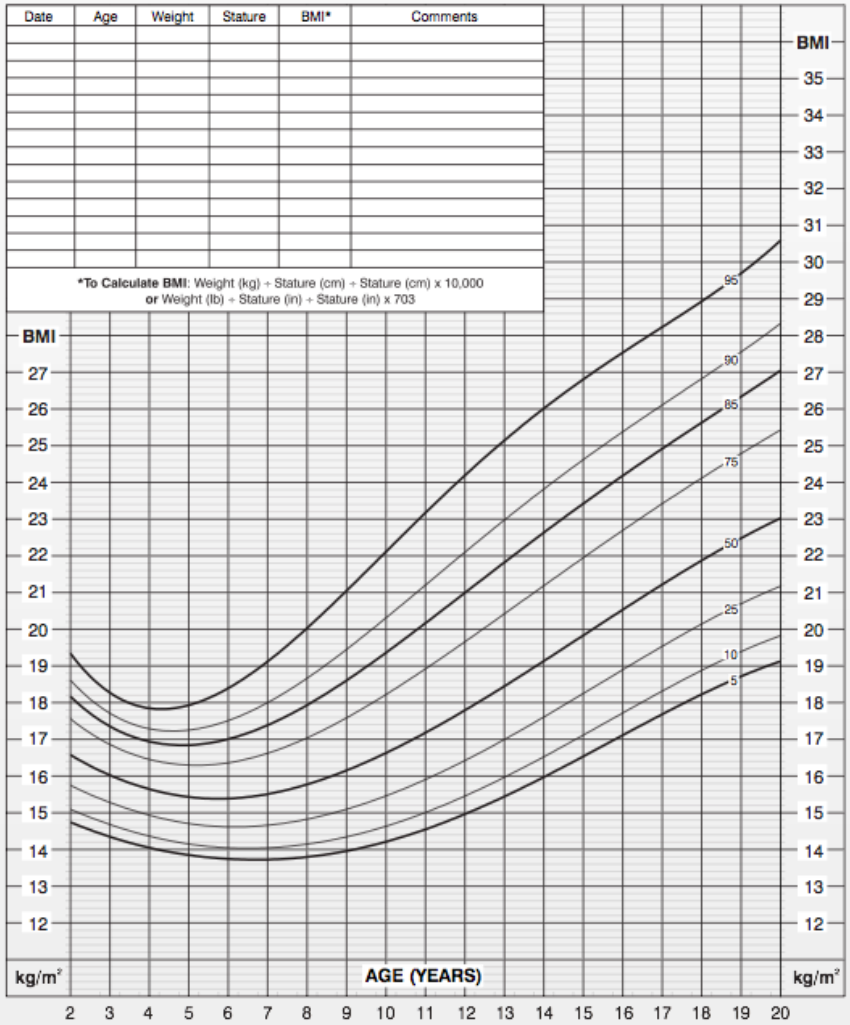

## 2 to 20 years: Boys
## Body mass index-for-age percentiles

NAME _____

RECORD # _____

| Date | Age | Weight | Stature | BMI* | Comments |
|---|---|---|---|---|---|
| | | | | | |

*To Calculate BMI: Weight (kg) ÷ Stature (cm) ÷ Stature (cm) x 10,000
or Weight (lb) ÷ Stature (in) ÷ Stature (in) x 703




Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

CDC
SAFER·HEALTHIER·PEOPLE™

- **What is the true picture?**

# Why the Concern?

- Childhood overweight, obesity -the most prevalent nutritional disorder in children and adolescents, globally

- Malnutrition- Marasmus, Kwashiokor in Barbados (up to early 70's) was replaced by another type of malnutrition…. *"From underfeeding to over-eating"*

- The incidence of childhood obesity has
- tripled in some age groups over the past 30 years
-

**An Epidemic-The WHO Member States in the 66th World Health Assembly this year (2018), resolution on a voluntary global NCD target to halt the rise in diabetes and obesity.**

# OBESITY ETIOPATHOGENESIS

Energy Expenditure

Energy Intake

Imbalance (+) → OBESITY

- Current Situation in the Caribbean
- EPIDEMIC PROPORTIONS!

**OBESITY in paediatric population**

**1990 - 4.6%**

**2013 - 6.9%**

**2020 - an 8.3%… prediction**

- **Factors that influence the balance**
  - ***main factors***
  - **environmental**
  - **biological-genetic**
  - **changing lifestyles**
  - **physical activity**

- **Being obese increases the risk of**
  - **diabetes, heart disease, stroke, arthritis**
  - **some cancers**

**Losing even 5 to 10% weight can delay or prevent some diseases developing**

# ◦BARBADOS

◦*(CARPHA 2012) M Anne St John, Ryan Hall, JaDon Knight, Marcia Hinds, Melissa Fernandez [4], Pamela S. Gaskin*

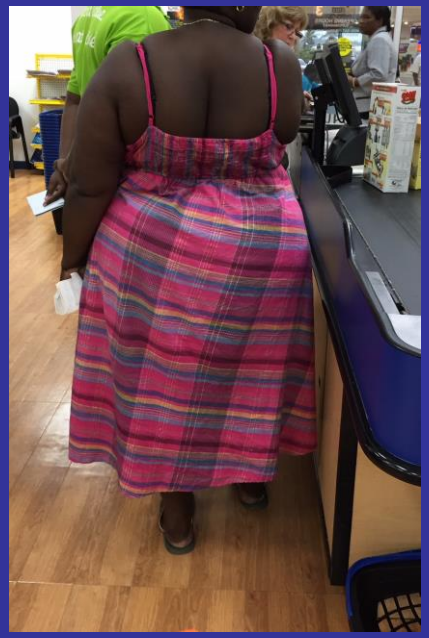
◦**Non-Communicable Diseases in a Group of Primary School Children in Barbados (2010)**

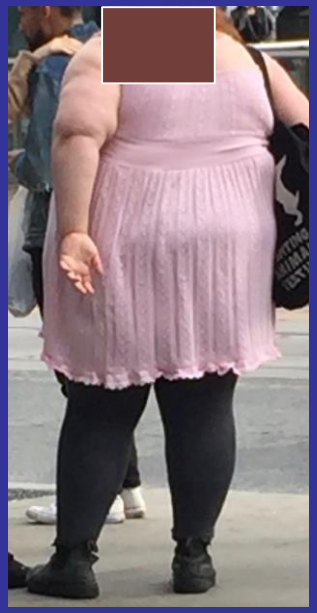
- **609 children , aged 9-10 years**
- **- class III Govt. primary schools scientifically selected**
- **- Prevalence of overweight 31% ; elevated BP 17%**

- Familiar day to day reality clinical practice
- Changing physical appearance of children, NCDs

- 8 yr
- 11 yr

# Future outlook as adults





# Pertinent facts - Barbados in adults

- **From 1965 to 2000, the average energy intake increased by approx. 400 Kcal/ person/day; dietary fat ↑ from 22% (570 Kcal) in 1965 to 29% (870 Kcal) in 2000.**

- **Barbados Food consumption Survey (2000) showed: almost 47% of men (<30 years) and 27% women had ready-to- eat meals x3-x4 per week ; nearly 54% men and 44% women ( < 30 years) had meals from a Fast Food restaurant x1 / week**

***(G. Xuerb PAHO Barbados)***

## Specific contributing factors identified:

- higher intake of energy-dense foods… poor in nutrients: high in fat, sugar, and salt, - as components of snacks and fast foods consumed on a daily basis

- frequent consumption of sugar-sweetened beverages (SSBs)
- insufficient physical activity daily- being sedentary in nature of many forms of work, changing modes of transportation, and increasing urbanisation with 50% of individuals not meeting the rhe World Health Organisation (WHO) criteria

- a shift away from locally grown/ sourced foods -prepared outside the home- often high in salt, refined sugars, cholesterol, trans-fat and saturated fat
- inappropriate consumption of excessive food portions for metabolic needs
- markedly decreased consumption of vegetables and fruits

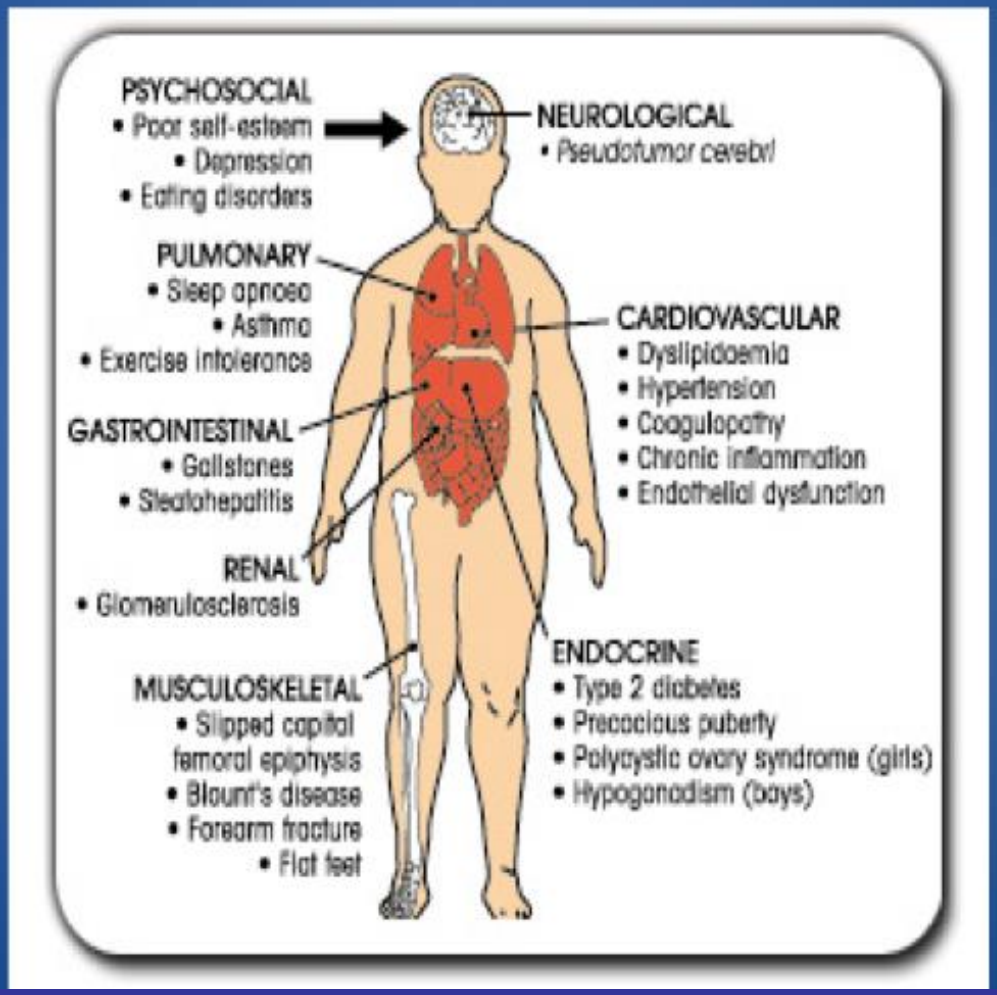
# Concerns..

- **Physical health complications**

- **Psychological effects**

- **- Specific effect targeting organs,**
- **morbidity-mortality**

## Clinical effects




***The financial burden*** **of these illnesses will increase exponentially, especially in resource limited countries**

- **General measures to address the growing epidemic of obesity in children**

- Firstly: To identify the magnitude of the challenge ..... already available from surveys

- Secondly: Interventions

# National Plan of Action for Childhood Obesity Prevention and Control (2015-2018)

## Barbados- Childhood Obesity Prevention Program (B-CHOPP)

**March, 2015**

**(Min. of Health- PAHO- Civil society, other Ministries)**

# In Place

- **Inter-regional agreements viz:**
- CARPHA- C'bbean Public Health Agency
- PAHO
- Locally level - Govt Ministries: Education, Health, Agriculture, Finance, and others
- lobbying by Umbrella bodies- HCC-Healthy C'bbean Coalition, HSFB
- networking in partnerships outresching to as many as possible stakeholders and civil society

- **Prevention is better than cure …**
- **Focus: Public Health Guidelines**

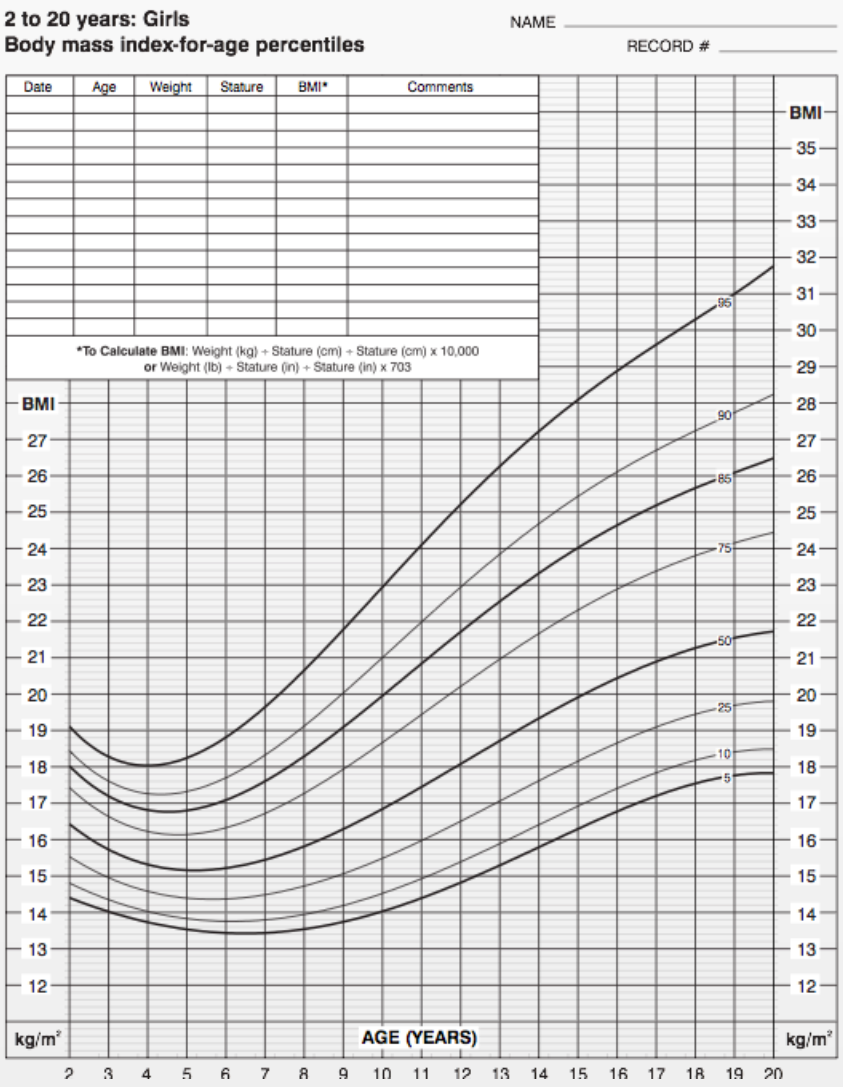
- ***Weight gain during health visits, <u>ALERTS are</u>***

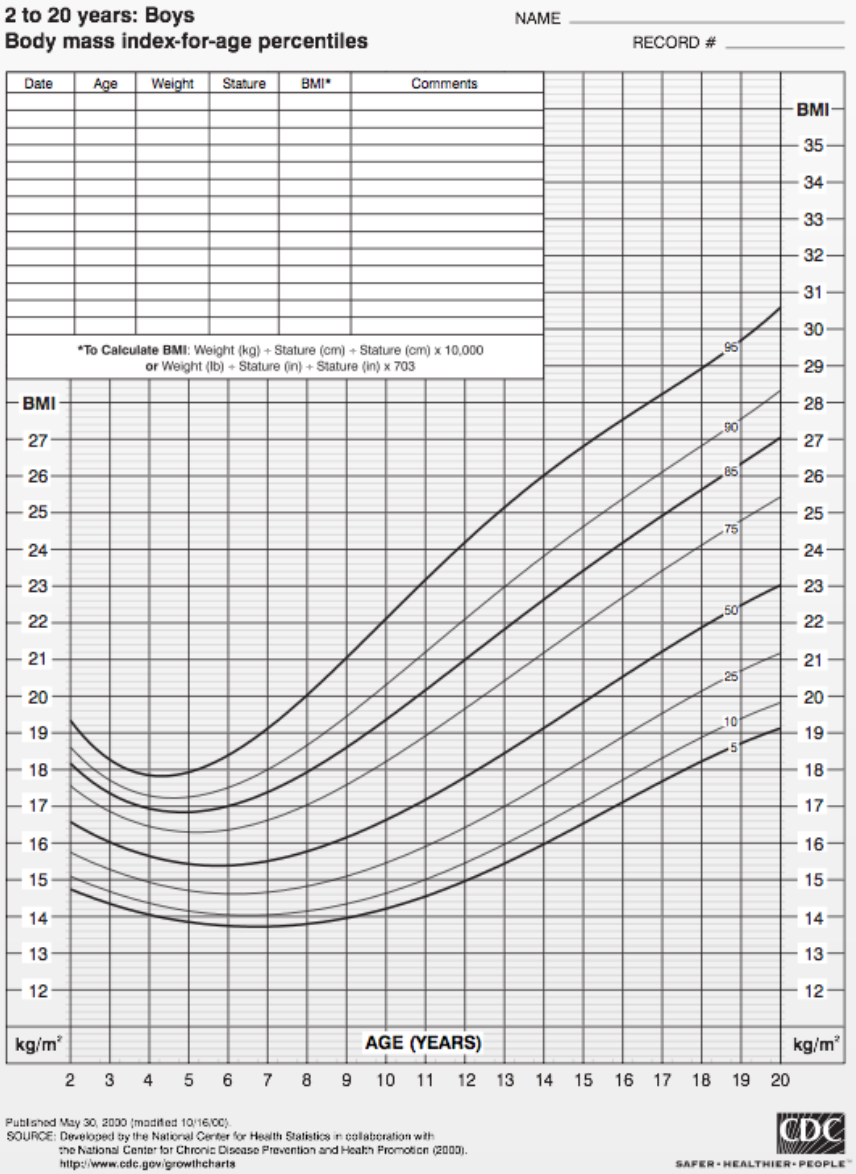
**<u>grossly neglected by physcians- HCWs</u>**

- ***Weight gain during pregnancy…strict monitoring***

- **promote total- near total breast feeding.. minimum at least 6 months,**
- ***Introduction of solid foods*…after 6 months**
- **From 2yrs, monitor BMI annually,**
  - **documentation, identify at risk**

# ◦Physician/ clinic/ parent awareness




Published May 30, 2000 (modified 10/16/00).
SOURCE: Developed by the National Center for Health Statistics in collaboration with the National Center for Chronic Disease Prevention and Health Promotion (2000).
http://www.cdc.gov/growthcharts

CDC
SAFER · HEALTHIER · PEOPLE™

*"Start children off on the way they should go, and even when they are old they will not turn from it."*

***Proverbs 22:6***

# Office management-clinic visits

- **Annual BMI in children aged 2-18, plot on gender specific charts**
- **Diagnose wt. category as:**

**(under-wt,healthy,over,obese,ob increased risk)**

- **Identify risk factors by personal history, co morbidities and by family history for future obesity**
- **history, detailed exam, and BP**
- **Assessment of behaviours (questionnaire)**
- **Lab tests**
- **Share prevention messages and counselling**
- **follow-up visits 1- 3 monthly (default high)**

BMI

# Prevention and treatment algorithm

with risk factors BMI

| BMI<br>5th- < 85th centile | BMI<br>85th- < 95th centile, *no risk factors* ** |
|---|---|

**Prevention counselling-office**

- **assessment and counselling**
- **reinforce healthy behaviours**
- **identify problem behaviours and family solutions**
- **assess motivation & attitudes**
- **deliver consistent messages, regardless of wt (5.4.3.2.1.0)**
- **actively engage the family**
- **encourage authorative parenting style**

**Re-evaluate annually**

- **Risk factors: Personal -BP, ethnicity, puberty, medication, acanthosis, BH ( SGA-LGA), disabilities
  Family - DM2, HT, cholesterol, obese parent/s, Gest DM in mother, death from Ht disease/ stroke

## *Proactive interventions, challenging*

- time-consuming
- frustrating
- difficult
- considered costly at times

# Challenges: CULTURAL FACTORS

**Frequent complaints from parent/ care providers at medical/ health care visits of the child :**

- **“is a picky eater” - i.e served excessive portions**
- **“ is too small”/ “not big enough” - i.e unrealistic**
- **“ forcing him to eat”- i.e recently ate & portions**
- **“ I have to feed him” -dependency & portions**
- **“ only wants snacks” - timing of meals/ parenting skills**

***Conclusion: review wt. and ht. for whether acceptable by normal values….reassurance***

# EATING BEHAVIOURS- realities

- 24 hour intake… *everything ingested*!

- SSBs- juices,energy drinks, tea, sodas, mauby
- Water intake
- Breakfast consumption (frequency, quality)
- Where does the child eat meals…how many*?
- "Fast food" / treat days /week, away from home
- Scheduled meals , snacks, additional "grazing"
- Meal preparation….baked/ fried etc.
- Portion size (meals, snacks)..of fist, thumb, palm

* 2 or >cooked "heavy meals"/day - lunch and dinner

- Prevention messages

**Reading of food labels**
**by parents and meal providers**

**make selection based on *sugar, salt, fat content***

# Foods- basic understanding by age

| Fruit | Vegetables | Dairy | Grains | Meat & Alternatives |
|---|---|---|---|---|
| Apples | Carrots | Milk | Bread | Chicken |
| Bananas | Celery | Yogurt | Biscuits/crackers | Turkey |
| Watermelon | Broccoli | Cheese | Rice | Fish |
| Oranges | Corn | | Pasta | Eggs |
| Mangoes | | | Cereal | Nuts & Seeds |
| Strawberries | | | | Legumes |


- **Children in the 85th – 94th centiles BMI**
- **Prevention strategies, counselling :**
- **Utilise the Programme Consortium to reduce obesity - modified Chicago module - " 5-4-3-2-1- 0"**

- **5- servings/ day fruit and veg**
- **4- cups or >water/day ...not SSGs**
- **3- servings low fat/non-fat milk/dairy**
- **2 - hours or less of screen time..TV/tablet/video/computer use**
- **1 - hour or more of physical activity**
- **0- almost none- Sugar sweetened bev.**

# Portion Control

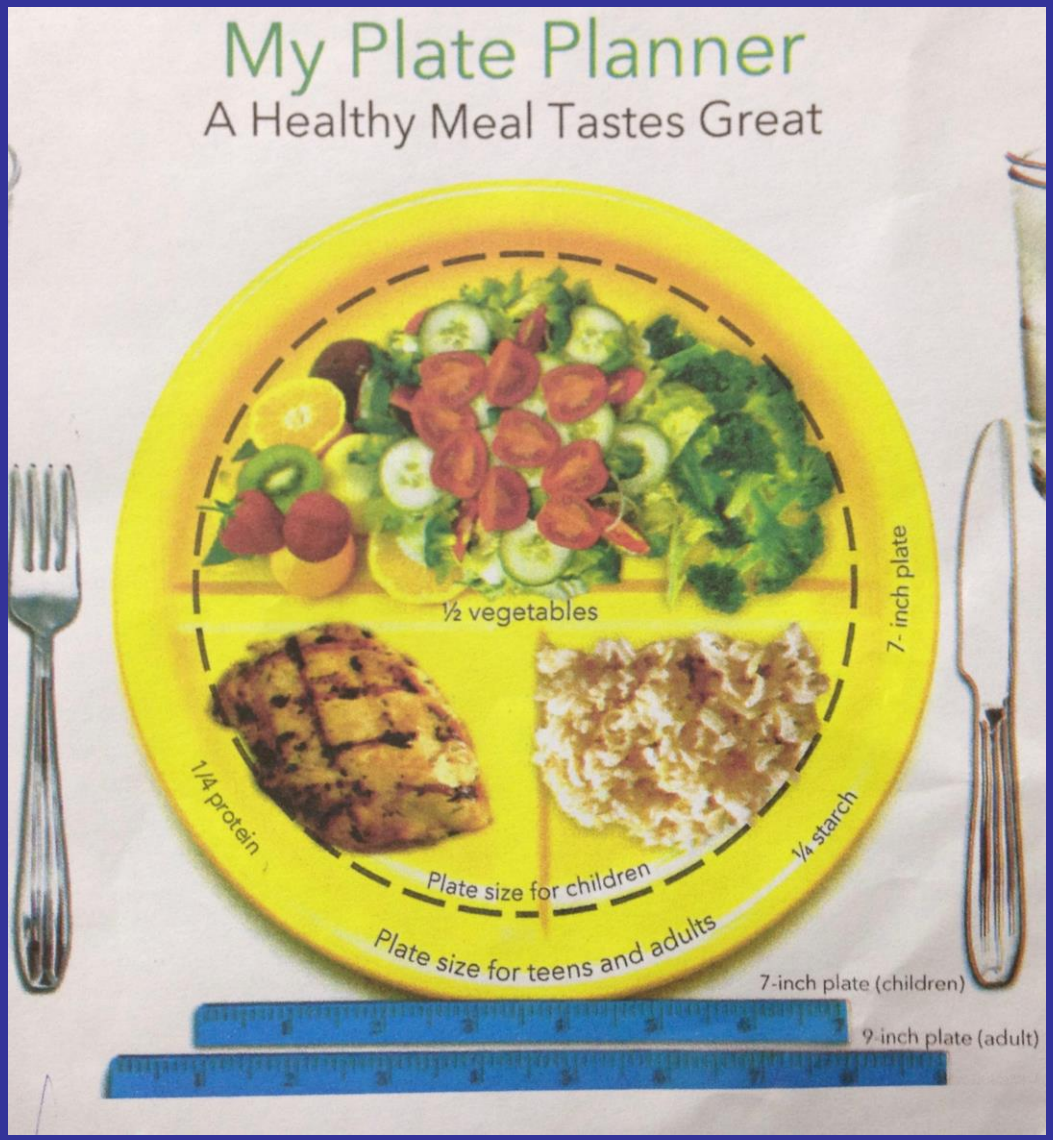
**A Fist**
Amount of Rice, Cooked Pasta, or Cereal

**A Thumb**
Amount of Cheese

**Palm of Hand**
Amount of Lean Meat

**Thumb Tip**
Amount of Peanut Butter

- * Water 1/2 glass- 1 glass immediately before the meal
- * NO 2nd helpings
- * 1/2 -1 glass water after the meal, as needed
* exit from the table area




- **Appropriate size plate for age 7” or 9”; divide in three; focus on PORTIONS**

# Prevention and treatment algorithm

| BMI<br>85th - < 95th centile<br>*with risk factors* | BMI<br>95th- < 99th centile | BMI<br>> 99th centile, >6yr<br>may start at step 2-3 |
|---|---|---|

**Step 1 treatment - office**

- explore /acknowledge effects of negative body image, low self esteem, social isolation
- f/u visits 1-3 monthly
- actively engage the whole family in lifestyle changes
- motivational interviewing
- 5-4-3-2-1-0 ….messages
- weight goal = initially main-tenance, lower BMI to < 85th centile as ht and age increase

# Barbados -student population survey

» 18.5% ate ”fast food” x 3-4 / week

» 73.3% reported drinking 1 or more carbonated drink/day

» 15% - NO vegetables/ fruits in the past month

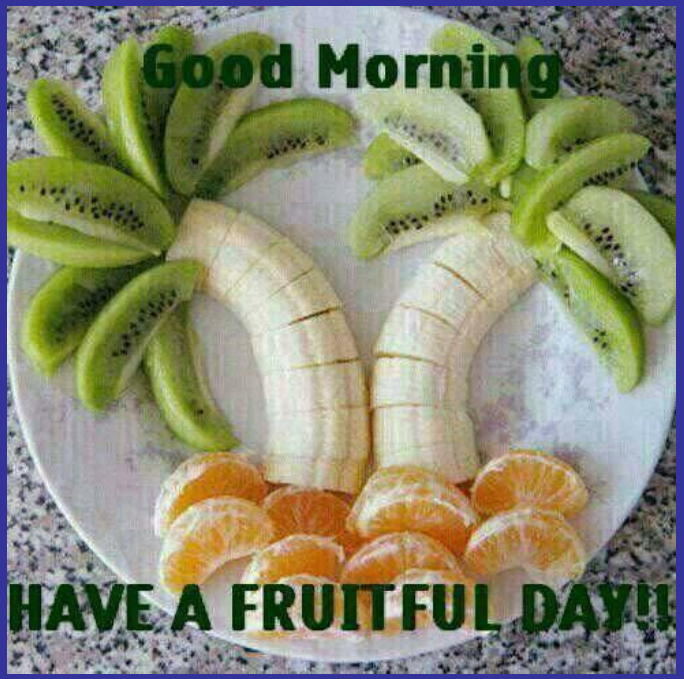
*(surveys by Healthy Caribbean Coalition)*

# Sugar shockers! …Servings/ container

**content of frequently consumed drinks / 8oz…..*lack of awareness***

**Daily allowance = 5 teaspoons sugar equivalent PER day (MAX =25gm)…..e.g for teens**

- SNACKS
- “Wise choices” or being fed (5-6 times a day from
- a young age) ..unlimited





# ◦PHYSICAL ACTIVITY BEHAVIOURS

- **Amount of screen time, TV, sedentary activities**
- **Amount of daily physical activity**
- **Role of environmental barriers and accessibility**

◦(e.g playground/ playpark: confinement)

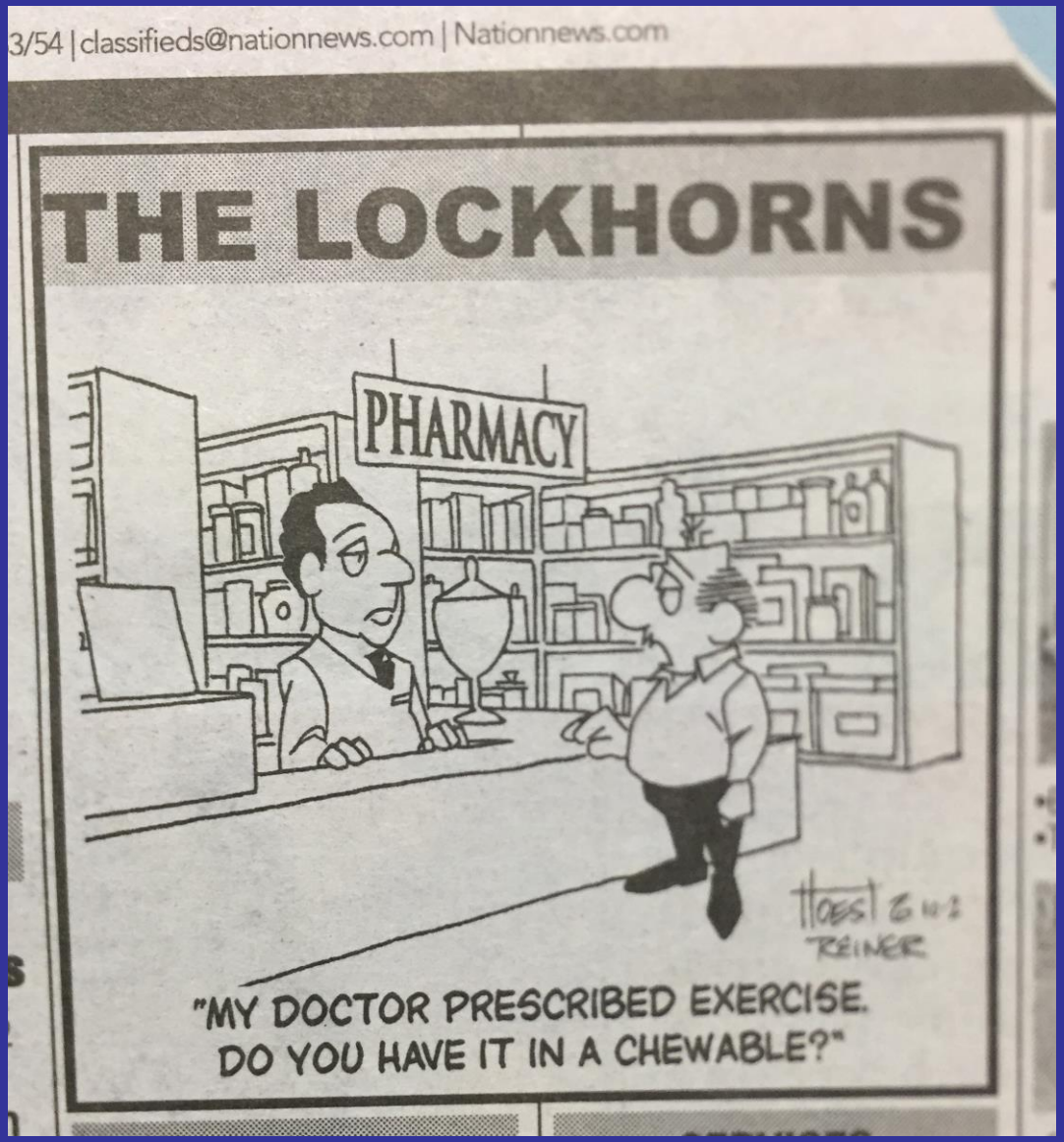
◦MYTH…strong belief in adults that

◦*physical activity alone plays a major role to cause weight loss, in the absence of modification*

◦*of intake, revision of meal plans and content.*

*Physical activity, improves cardio-fitness*

- Role models as adults



# Prevention and treatment algorithm

| BMI<br>85th - < 95th centile<br>*with risk factors* | BMI<br>95th- < 99th centile | BMI<br>> 99th centile, > 6yr |
|---|---|---|

**If no improvement or stabilisation from step 1 Rx in 3-6 months**

**<u>Step 2</u> treatment -**

**office with support**

- **monthly visits for weight counselling**
- **behaviours- through diet & activity log**
- **nutrition training-dietition referral**
- **engage family in lifestyle changes**
- **community based programmes**
- ***Wt goal = maintenence, lower BMI as age & ht increase***

# Prevention and treat Prevention and treatment algorithm

| BMI<br>85th - < 95th centile<br>*with risk factors* | BMI<br>95th- < 99th centile | BMI<br>> 99th centile, >6yr |
|---|---|---|

**If no improvement or stabilisation from step 2 Rx in 3-6 months**

**Step 3 treatment-**

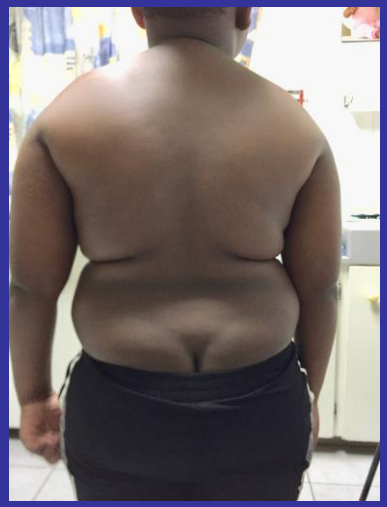
**comprehensive , multidisciplinary prog/ tertiary care specialist & or centre referral**

- **evaluation and f/u by multidisciplinary team**
- **weekly visits for 8-12 weeks**
- ***Wt goal = wt maintenence or gradual wt loss***
- **other Rx options: medication, very lower calorie meals (under medical supervision) ; referral - consideration for bariatic surgery (rare)**

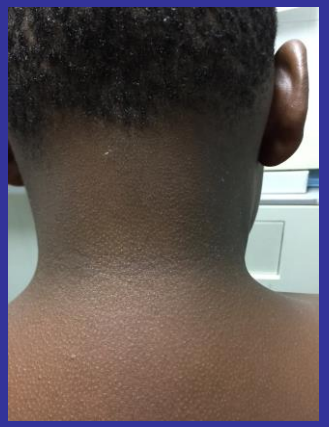
# Laboratory investigations

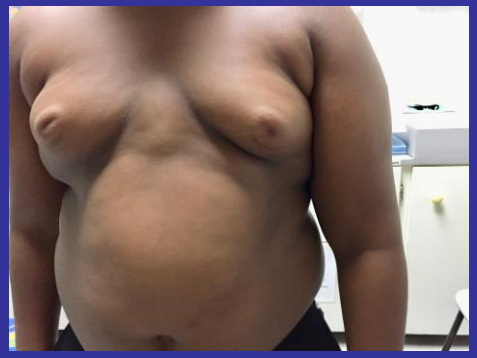
| Age | BMI | Risk factors | Action plan |
|---|---|---|---|
| < 10 years | > 85th centile | N/A | consider fasting lipids |
| > 10 years | 85th to < 95th centile | None/ asymptomatic | consider fasting lipids |
| | | 2 risk factors | biannually: fasting lipids, FBS, consider LFTs |
| | > 95th centile | N/A | biannually: fasting lipids, FBS, LFTs others wrt history |

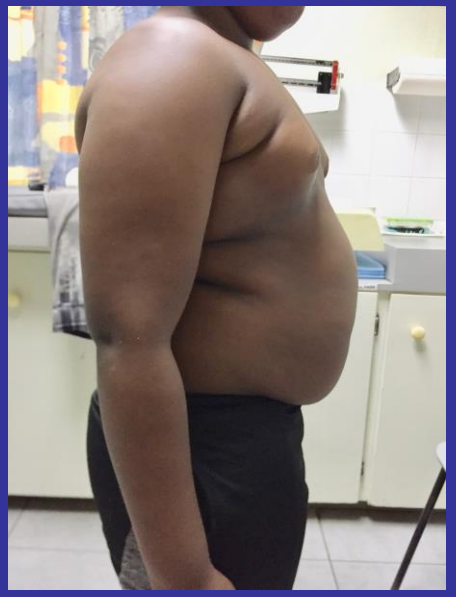
- **Case senario-**
- ***8 year old visits paediatrician for an illness***



- **Clinical stigmata**
  - **striae**
  - gynaecomastia
  - trunkal adiposity
  - acanthosis nigricans
  - exercise intolerance
  - snoring, sleep dist.







- **At 4 years- 27.2 Kg BMI= 27.7 counselled**
  **At 6 years- 39 Kg BMI = 34 counselled**
  **At 8 years- 59Kg BMI = 39.8 counselled**

## National level- call for action

- Behaviour changes, engaging stakeholders, civil society
- Policy changes- SSBs, unhealthy foods, promotion of unhealthy foods and drinks
- School health promotion policy (foods, activities) Policy Health Promotion
- Guidelines for school meals served in primary school and canteens in secondary schools

## Policies and enactment of legislation

» **Advertising - marketing of unhealthy (junk) foods.. in schools and lure by fast food companies, consumption of SSBs, non beneficial sponsorship of school's sports, policies**

**……**

***Healthy Caribbean Coalition (HCC)***

**" Call to action" …2018 initiative**

**- www: Too much junk.org … sign the petition**

- HSF Barbados

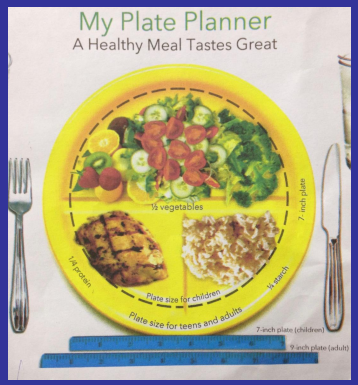

- CHOPP Launch 2018

# INTERVENTION- *physical activity, programme*
# Heart and Stroke Foundation of Barbados "Yute Gym"

- 2015 initiative- privately funded
- age 8-18yr, Sat. 2 classes, weekly;6 mths-1 year
- referals : Drs, clinics, school & other sources
- counselling re weight management, exercise, food labels, nutrition for entire family
- register by referral letter/call/ visiting the HSFB
- certification post 1 yr enrollment- completion

# Key messages…awareness
# Our children have a right to be healthy


- » Reading of food labels
- » Wise choices/ healthy alternatives
- » Moderation/ portion sizes
- » Policies for sustainable gains and healthy living



# Obesity management - Summary

- **Medical approach:**

  Primary Care Physician coordinating, counselling

- Weight Management Programme
- Nutritionist
- Behavioral therapy - (psychologist)
- Structured physical activity (Gym/ activities specialist)

Paediatrician-paediatric /endocrinology specialist

**Surgical approach:**

Last resort..option in morbid obesity.. medical management failure… Bariatric surgery.

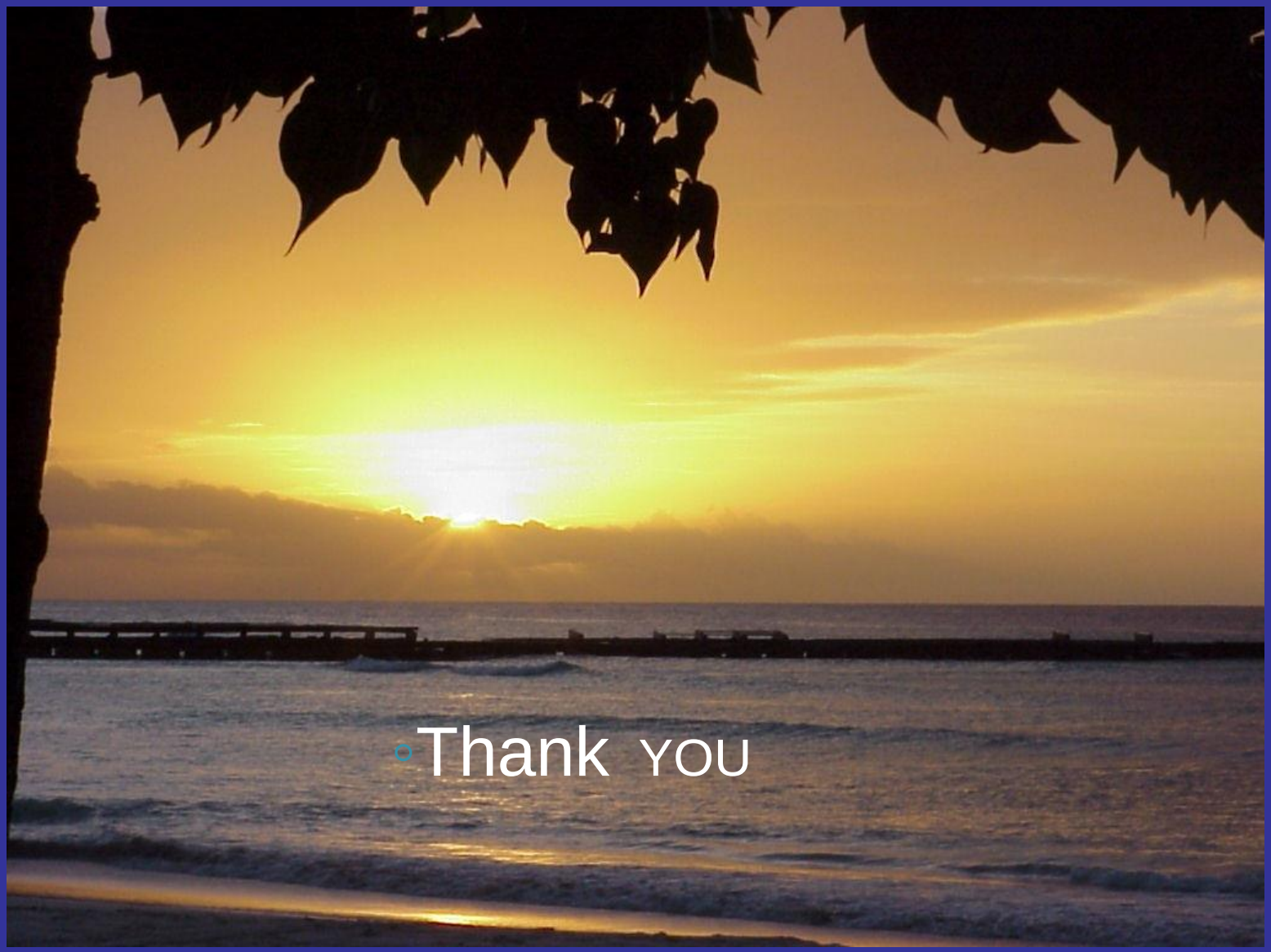
# MULTIPLE CHOICE QUESTIONS- POST TEST

**Which are the recommended interventions related to overweight-obesity in children?**

a) 5 servings of fruit and vegetables per day
b) 4 servings of water
c) less than 2 hours of screen time
d) 1 hour minimum per day of moderate physical activity
e) all of the above

**Which factors play a role in childhood overweight - obesity in children?**

a) genetic factors
b) high intake of sugar sweetened beverages
c) high salt intake, foods high in cholesterol, trans fat and saturated fats
d) cultural factors
e) all of the above


Thank YOU


BASIC CARB COUNTING
1 choice ≈ 15 grams carbohydrate (CHO)
Grains
1 carb choice
Whole Wheat Bread
1 slice (1 oz.)
Oatmeal
½ cup
Pancake
4" dia.
Dry Cereal
¾ cup
Pasta
⅓ cup
Rice
⅓ cup
Vegetables
1 choice = 5 grams of carbs
2 per day free
Starchy
1 carb choice
Baked Beans
⅓ cup
Corn
½ cup
Peas
½ cup
Baked Potato
Medium (3 oz.)
Mashed Potato
½ cup
Non-Starchy
Asparagus
½ cup
Broccoli
½ cup
Cauliflower
½ cup
Beets
½ cup
Carrots
½ cup
Fruit
1 carb choice
Banana
4 oz.
Blueberries
¾ cup
Cantaloupe
¼ Melon (11 oz.)
Grapes
15 Medium (3 oz.)
Orange
Small
Raisins
2 tbsp.
Milk
1 carb choice
Milk, Whole
8 oz.
Milk, Skim
8 oz.
Milk, Chocolate
4 oz.
Plain Yogurt
6-8 oz.
Meat & Protein
No carbs to count
Tilapia
3 oz.
Egg
1 Medium
Chicken
White Meat (3 oz.)
Ground Beef
Lean (3 oz.)
Roast Beef
3 oz.
Fats
Little or no carbs
Margarine
1 tsp.
Mayonnaise
1 tsp.
French Dressing
1 tbsp.
Cream Cheese
1 tbsp.
Butter
1 tsp.
Other
1 carb choice
Brownie
Unfrosted 2" (1 oz.)
Cookies
Unfrosted 2" (1 oz.)
Grape Jelly
1 tbsp.
Vanilla Ice Cream
½ cup
2 carb choices
Frosted Yellow Cake
2" square