CASE SCENARIO

Carbohydrate Counting

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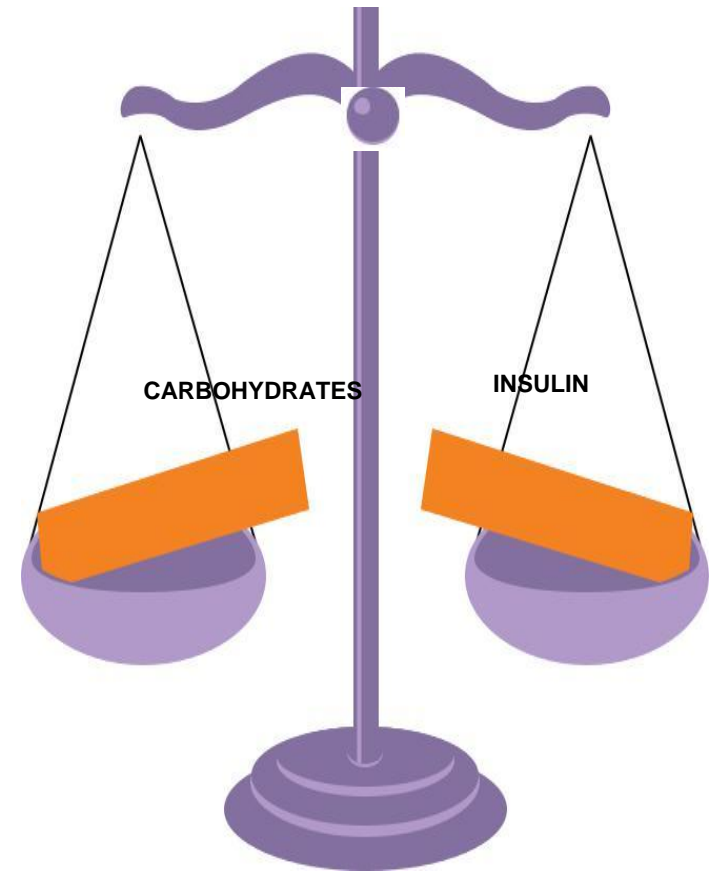# Carbohydrate Counting

- Estimate carb content of the food

- Adjust the insulin dose to match the amount of carbs

Why Carbohydrate Counting?

•More flexibility & variety

•A sense of feeling in charge

•Potential for improved blood glucose control

•More precise way to match food and insulin

CARBOHYDRATES

INSULIN

Case Scenario

Patient Information :-

Age : 21 years , Medical Student

Chief Complaints: Vomiting multiple episodes

Principal Diagnosis : DKA, Type 1 DM on Insulin Pump

Physical Examination :

Temperature- 98.8 F

Pulse- 128 beats/ minute , Respiratory rate- 20/ min

BP- 130/ 90 mmHg

Severely dehydrated

CVS -   S1 S2 (+)

Rs -   Clinically VBS (+) bilateral

CNS - Conscious, oriented

Biochemical Report on Admission

Parameters	Report	Reference Value
HbA1C	10 %	6.0-8.0% Good Control
RBS	634 mg/dl	70-120 mg/dl
Serum / Plasma Urea	52 mg/dl	10-45 mg/dl
Serum Creatinine	1.2 mg/dl	0.5-1.4 mg/dl
Na+	133	135-145 mEq/L
Serum K+	6.2	3.5-5.0 mEq/L
Complete Blood Count		
Hb	15.1	11.16 gm %
Haematocrit	44.5%	34-48%
TLC	26000	4000-11000 cumm
DLC – Neutrophil	91%	40-80%
Lymphocyte	7%	20-40%
Eosinophil	0.1%	1-6%
Monocyte	1%	2-10%
Basophil	0%	0-1%
ESR – Platelets Count	21	0-30 mm/hr
Platelets Count	4.6 lakhs/cumm	1.4-4.5 lakhs/cumm

RBS (6ᵗʰ hourly)and Insulin dose During the staying

Time	Blood Sugar (mg/dl)	Insulin dose
Pre Breakfast	**272**	7 U
Pre Lunch	160	4 U
Pre Snack	**190**	2 U
Pre Dinner	**288**	6 U
3 AM	131	NIL

NUTRITIONAL ASSESSMENT

- Height : 169

- Weight : 70 kg

- BMI : 25kg/m2

- Appetite on admission- Poor

- Food Allergies/ Intolerance : None

- Religious Beliefs : Vegetarian

  Diet History : 3 days diet recall and found she had 80% carbs in diet before admission had feast also and she was not aware about carbs contain foods.

This is why we count carbs!

"...Doctor, I have Billy Roberts on line two who wants to konw how much insulin he needs to take to cover 6 malt balls...3 chocolate bunnies...11 marshmallow eggs... oh... and a whole handful of gummi worms..."

Nutrition Intervention

- **Carbohydrate Counting -** Emphasis to follow a consistent Carbohydrate Meal Plan or adjust insulin for carbohydrates to help keep blood glucose close to target levels.

  The recommended number of servings of carbohydrates is based on weight, activity level, diabetes medications, and goal to maintain blood glucose levels.

- **Why just carbs ?**

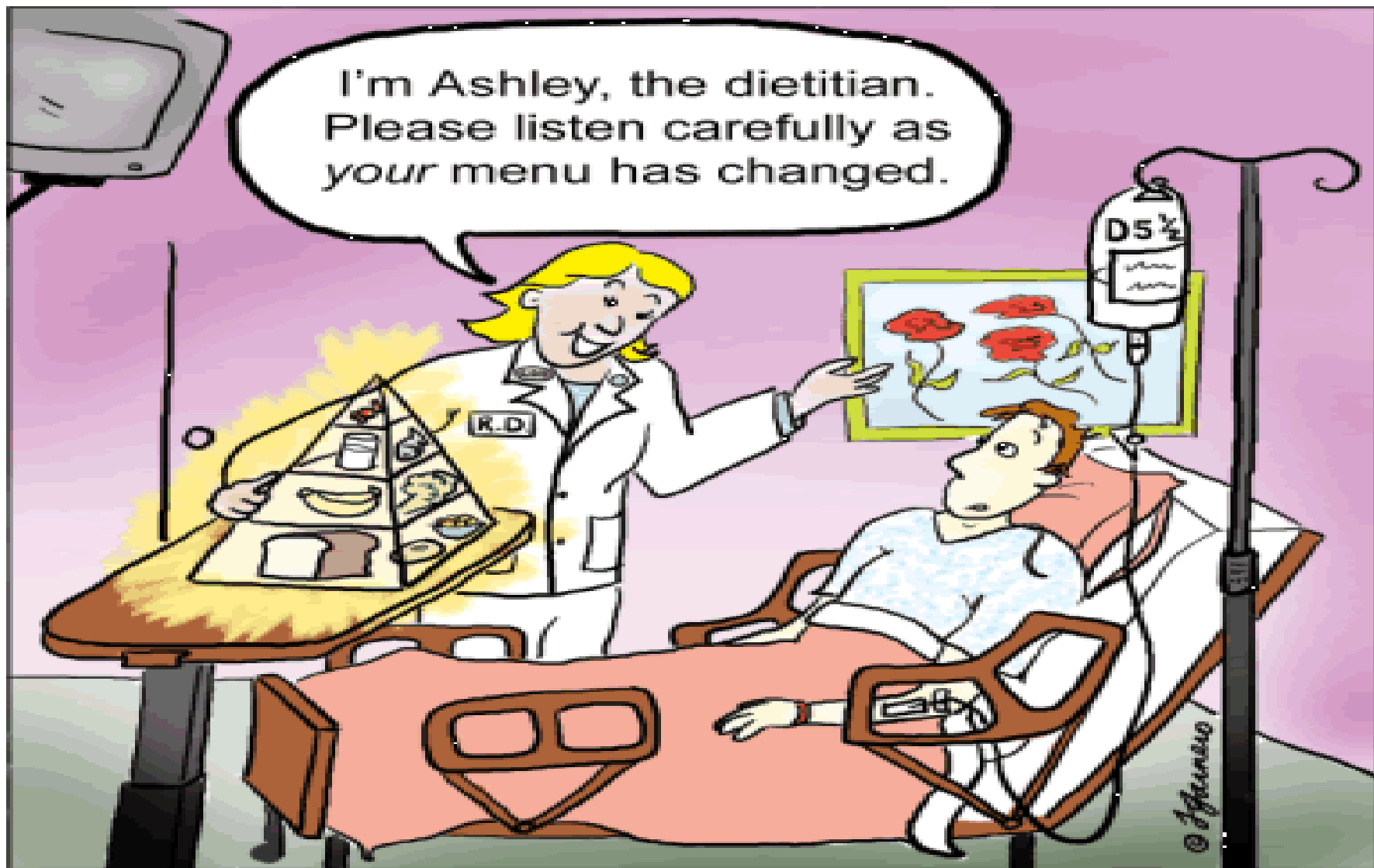 Carbs are converted to glucose faster than fats / Proteins.

Prescribed Diet : Balanced Diet 1800 kcal/day

Advanced CHO counting and education on insulin pump therapy
1800 Calories ÷ 2 = 900 (½ calories from carbohydrates)
Total- 225g carbohydrates / day

Diabetes in Control obtained permission to reprint from artist Theresa Garnero (source: DIABETease).

NUTRITION CARE PROCESS

Education : Carb Counting

Step 1 : Know the source of carbs

Which foods contain carbohydrates?

Examples	Exceptions
All fruits ,dry fruits	Non vegetarian foods
All cereal and their products	Nuts ,oil
All pulses and lentils	Salad
All roots and tubers Milk and milk products	
All sweets and dessert	

Carb counting – Step 2

Estimate the carb content of food : *Each of the foods shown below represent 15 g Carb exchange*
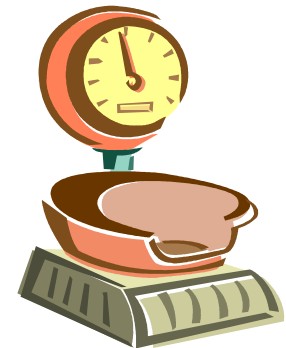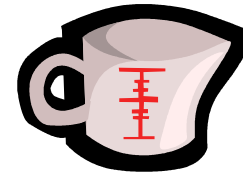

Muesli (19.2 g)

Oats (24 g)

Raw Rice (Raw Weight) – 19 gm

Estimating Carbs

- **Estimate the portion**

- **Measuring spoons /cups/Gram scales, Salter Scale**

- **Food labels**

- **Carb counting list / books/ EXCHANGE LIST**

- **Weighing food – Carb counting scale**

Step 3- Portion Estimation Method

1 Healthy Serving of vegetable
= Size of your two open hands

1 Serving of cereal and pulsesflour/atta, rice, poha, pasta, pulses, soya others = Your closed fist

1 Serving of fish, meat
= Your palm size

Carb content from Labels

- **Look at the Total Carbohydrate figure**

- **Calculate amount per portion /serving**

Nutrition Facts

Serving Size 1 cup (4 oz)
Serving Per Container 3

Amount Per Serving

Calories 75 Calories from Fat 27

	% Daily Value*
Total Fat 3 g	5%
Saturated Fat 0 g	0%
Cholesterol 0 mg	0%
Sodium 300 mg	4%
Total Carbohydrate 10 g	3%
Dietary Fiber 5 g	20%
Sugars 3 g	
Protein 2 g	

Vitamin A 80% · Vitamin C 60% · Calcium 4% · Iron 4%

* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:

		Calories:	2,000	2,500
Total Fat	Less than		65g	80g
Sat Fat	Less than		20g	25g
Cholesterol	Less than		300mg	300mg
Sodium	Less than		2,400mg	2,400mg
Total Carbohydrate			300g	375g
Dietary Fiber			25g	30g

Calories per gram:
Fat 9 · Carbohydrate 4 · Protein 4

The serving size for the food is 1 cup.

There are 3 servings or 3 cups in this container.

The total carbohydrate tells how many grams of carbohydrate are in 1 serving.

Sugar is already included in the total carbohydrate amount. This value shows the amount of natural or added sugar.

Breakfast : 8 AM

- 3 Idli (medium): 30g
- 1 Katori Sambhar : 12 g
- 1 Katori Chutney : 3 gm
- 1 Glass (250ml) Milk: 10 g
- Total Carbs: 55 g

- **Insulin to Carb Ratio 1:15**
- **Amount of insulin required for this meal: 3.6 U**

Lunch : 1 PM

- 2 Roti (medium): 30 g
- 1 small Katori Rice : 10 g
- 1 Katori Dhal : 10 g
- 2 Katori Veg : 2 g
- 1/2 cup Curd : 2 g
- 1 Plate Salad: 2 g
- Total Cabs: 56g

- **Insulin to Carb Ratio 1:15**
- **Amount of insulin required for this meal: 3.6 U**

Dinner : 8 PM

- 3 Roti (medium): 45 g
- 1 small Katori Dhal : 10 g
- 2 Katori Veg : 2 g
- 1 Plate Salad : 1 g
- Total Cabs: 58 g

- **Insulin to Carb Ratio 1:15**
- **Amount of insulin required for this meal: 4 U**

Snacking

- Small snacks < 15 gm carbs – No insulin needed

- Larger snack over 15 gm carbs –Insulin may be required

- **1 Apple = 1 cup popcorn = 3 serving salad= 1 gulab jamoon = 15 gm carbs**

FOOD EXCHANGE

1 Exchange = 1 Choice = 1 Carb = 1 Portion = 1 CP (Carb Portion) = 1 CU (Carb Unit) =15 g carbohydrate

If you have a choice between do you choose? between a cake and an apple... What do you choose ?

Break up of carbohydrates at each meal

Meal	Grams of Carbohydrate	Carbohydrate
Morning Tea	15 gm	1 CHO Choice
Breakfast	55 gm	4 CHO Choices
Snack	15 gm	1 CHO Choice
Lunch	56 gm	4 CHO Choices
Snack	15 gm	1 CHO Choice
Dinner	58gm	4 CHO Choices
Snack	15 gm	1 CHO Choice
Total (16 x 15)	228gm	16 CHO

Conclusion

- Carbohydrate Counting empowers you to manage your diabetes more effectively matching your own lifestyle, while offering more variety to your meal plan.

- Diabetic patient treated with insulin should match their insulin (time and dose) with their meal times and carbohydrate amounts.

- Importance of keeping records

- After 3 months she came for follow up . We reassessed and found that she followed carbs counting. Her HbA1c reduced to 6.0% from 10.0%.

Acknowledgement

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- Dietetics team, Apollo Hospitals Bilaspur

Thank you!!!!!!!