

Experiential Learning

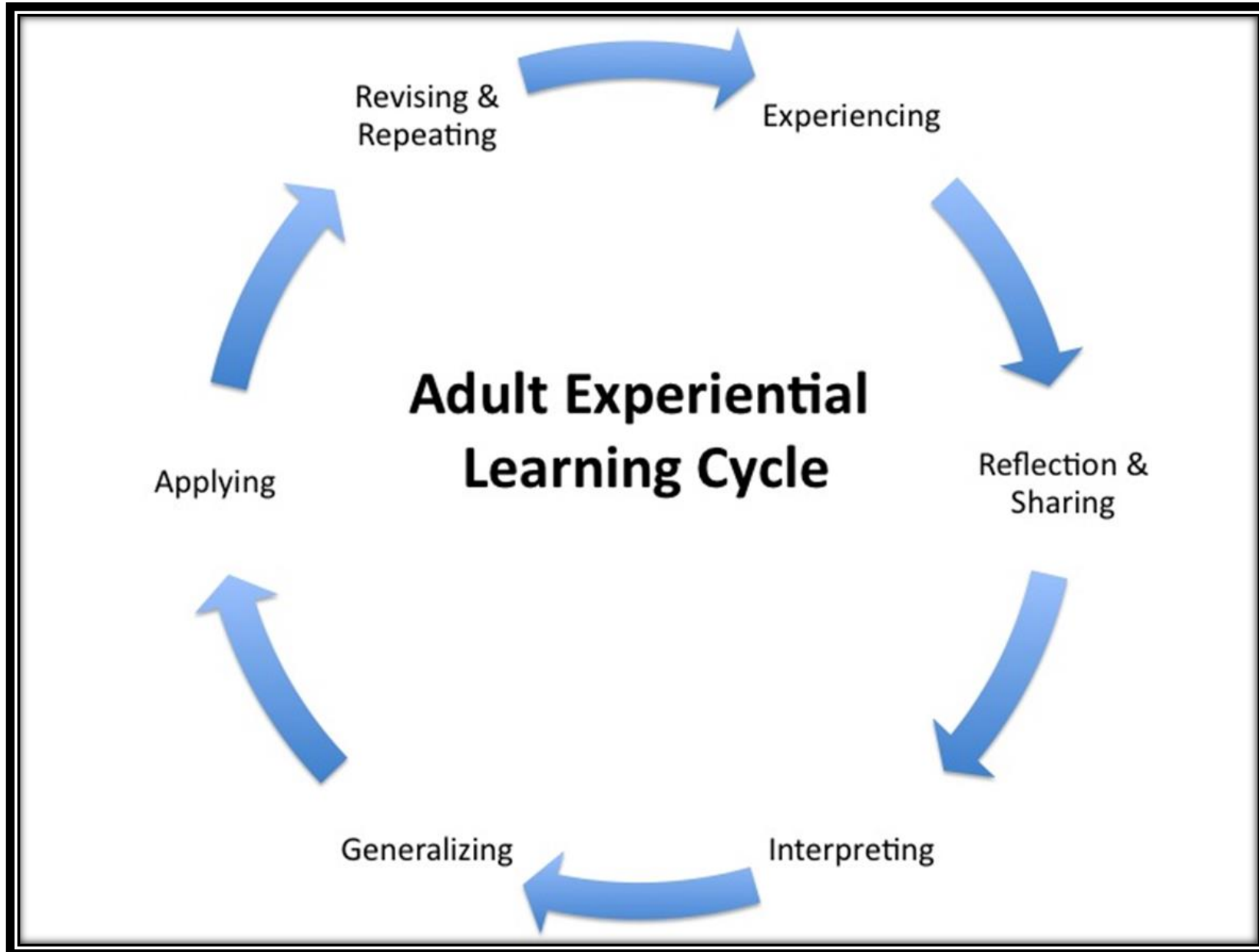


An alternative to Carbohydrate Counting in blood glucose management

Elaine Chong, Dietitian

Learning is the process whereby **knowledge is created through** the transformation of **experience**

David A. Kolb



Blood glucose management:



Meal

Meal Timing



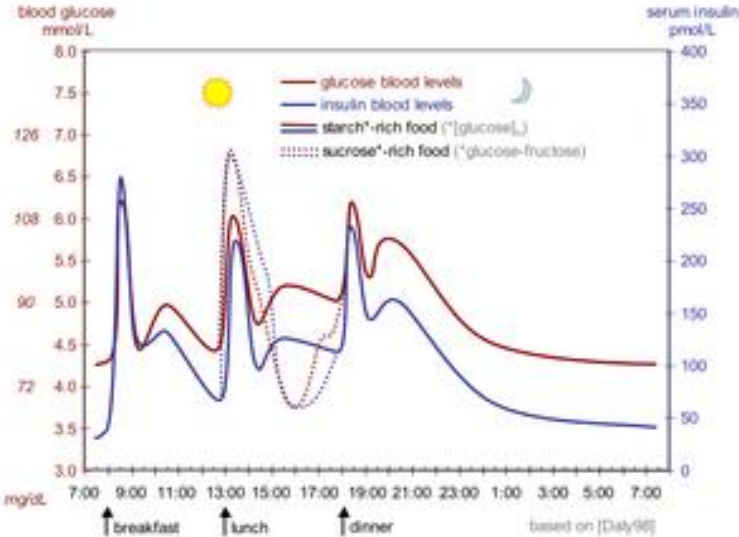
Medication



Daily Routine
of Businessman



Exercise intensity

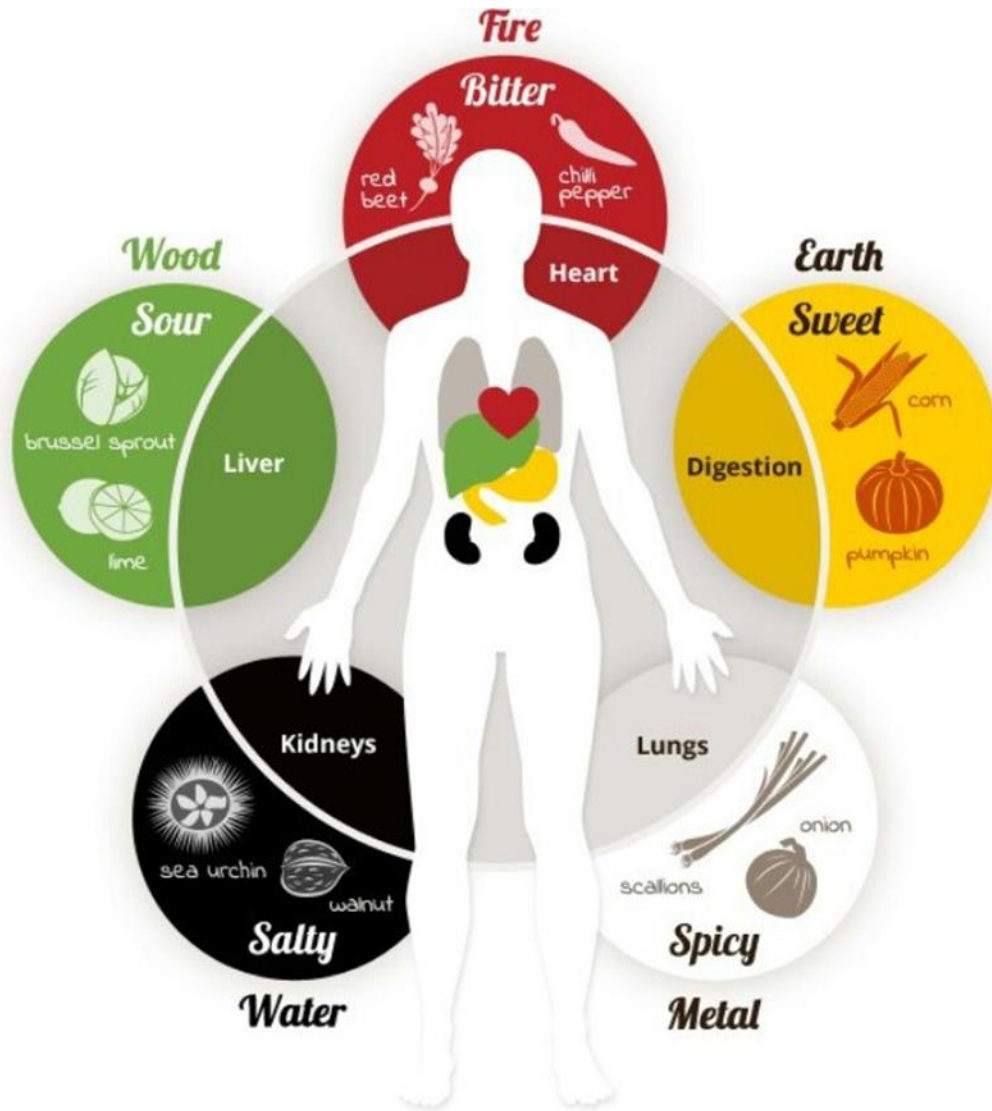


Case Study



- 56M
- Originally from China, NZ for 15 years
- Non smoker. Non drinker
- Weight 85.4kg
- PMHx:
 - Functional Dyspepsia
 - Functional Diarrhoea
 - NAFLD
 - T2DM HbA1C 99
- What are the Dietetic issues at hand?

Health Belief



- Food is medicine, medicine is food.
- Traditional Chinese Medicine (TMC) treats the 'root', Western Medicine treats the 'symptoms'.
- Food safety

Relevant Biochemistry Results:

- HbA1c: 99 mmol/mol
- Total cholesterol: 7.2 mmol/L
- TG: 9.9 mmol/L
- Cholesterol: HDL: 8.5
- Ferritin: 714 ug/L
- ALT: 66 U/L

Medication:

- 1500mg Sulphasalazine bd



HbA_{1c} as indicator of Diabetes Control



*This is an estimated average glucose (eAG)

Nathan et al. Translating the A1C Assay Into Estimated Average Glucose Values. Diabetes Care 2008; 31:1473-1478
Christchurch Diabetes Centre 2009

Enable Experiential Learning

Short-term goals:

Improve capillary blood glucose levels with dietary intervention and medication.

- Convince him to do something about his blood glucose
- Enable him to take charge by providing him with the knowledge and tool
 - Glucose meter
 - Blood glucose targets
 - Manipulate dietary pattern to achieve blood glucose targets
 - Interpret capillary blood glucose levels and make changes accordingly
- Facilitate learning



Random blood glucose levels in the clinic:



2 Chinese Ya Pears



2-3 Shanghai Siew Mai



Good Quality
Green tea



2 Chinese Pancake



2 fist size
Eight Treasure Congee



1 hour after breakfast



2 hour after breakfast

Eight Treasure Congee



Eight Treasure Congee



		Estimated carbohydrate
Breakfast 9-10am	Rice porridge + steamed bun or Mixed beans soup + glutinous rice dumplings or Dumplings + eggs or Meat pies/Sausage roll or Beef noodles	60 – 400g
Lunch 12-1pm	Fruits	45-60g
Dinner 4pm	2.5 cups of rice + meat + vegetables	100 – 120g
Exercise 5:30-6pm	Swimming, sauna and hot bath	
Supper	1 cup of milo made with milk	20g
Drinks	Water, tea, lemon-flavored water	



CareSens™ N Premier Blood Glucose Monitoring System

- Easy Data Transfer by Bluetooth Connection
- 2.5" Large, Backlit Display
- Test Result Tagging Options



Bluetooth



i-sens

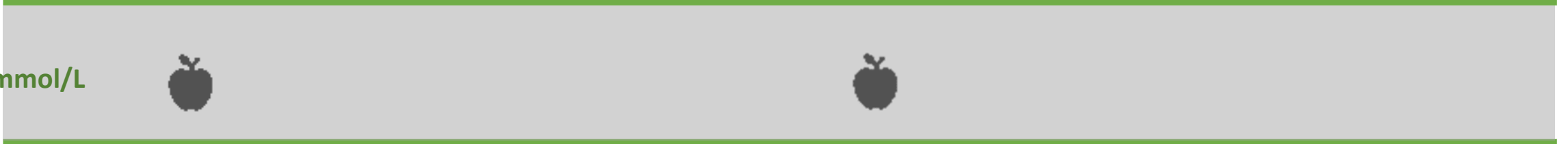


SMART LOG

10 mmol/L



6-7 mmol/L



Breakfast
9-10am

Dinner
4pm

Swimming pool
5:30-6pm

Supper

10 mmol/L



6-7 mmol/L



Breakfast

9-10am



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2-3 Shanghai Siew Mai



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Dinner

4pm

Swimming pool

5:30-6pm

Supper

10 mmol/L



2 hour after breakfast

6-7 mmol/L



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Good Quality
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4pm

Swimming pool

5:30-6pm

Supper





Fibre 纤维

Plant Sources
植物

Carbohydrate 碳水化合物 (淀粉)

Plant Sources
植物

Animal Sources
动物

Plant Sources
植物

Protein 蛋白质

Animal Sources
动物

Plant Sources
植物

Saturated Fat
饱和脂肪

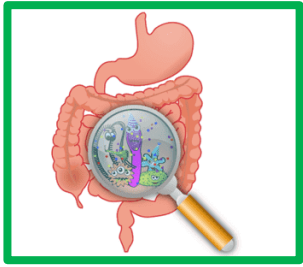
Trans Fat
反式脂肪

Unsaturated Fat
不饱和脂肪

Polyunsaturated Fat
多不饱和脂肪

Monosaturated Fat
单不饱和脂肪

Fat 脂肪



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Blood glucose management:
Consistent carbohydrate portion



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Plant vs animal protein:
Gut microbiota
Red meat vs white meat vs sea food



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About Fat:
 Gut microbiota
 Animal fat vs plant fat
 Processed vs fresh



Fibre
 纤维

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 植物

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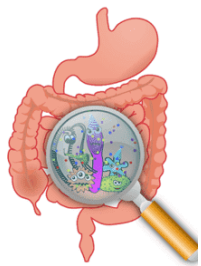
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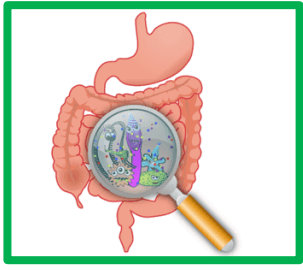
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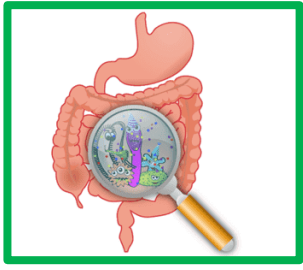
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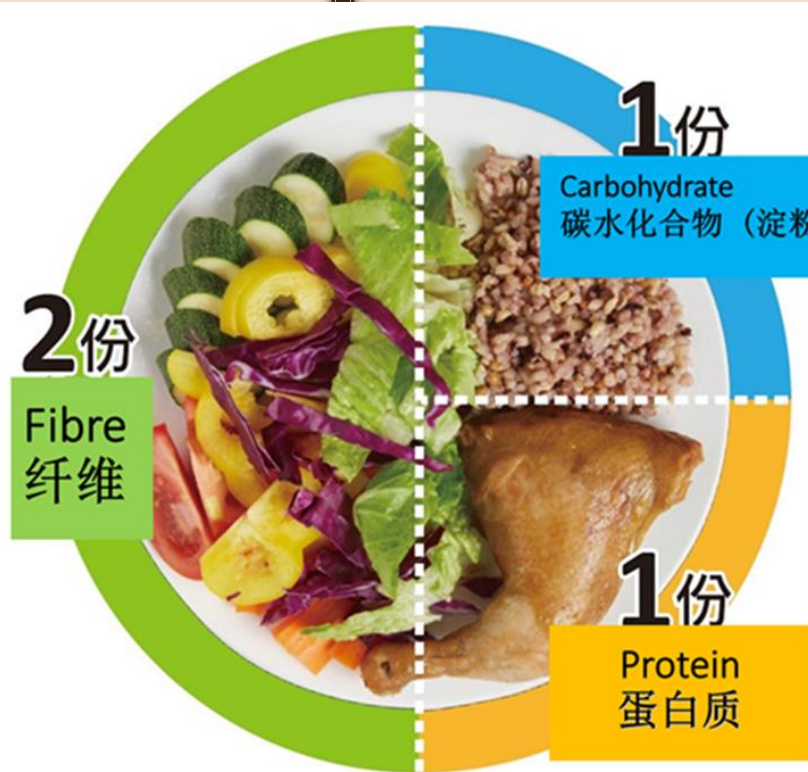
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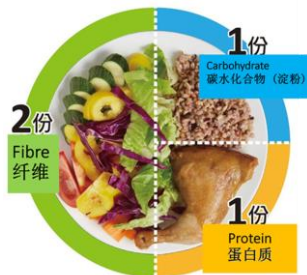
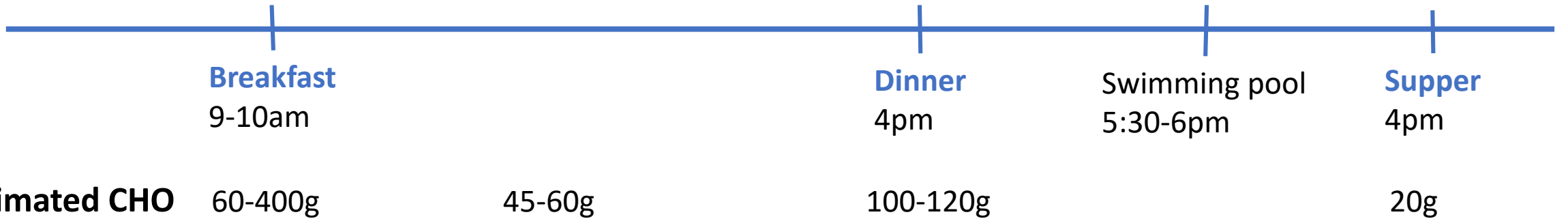
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Recommendations:



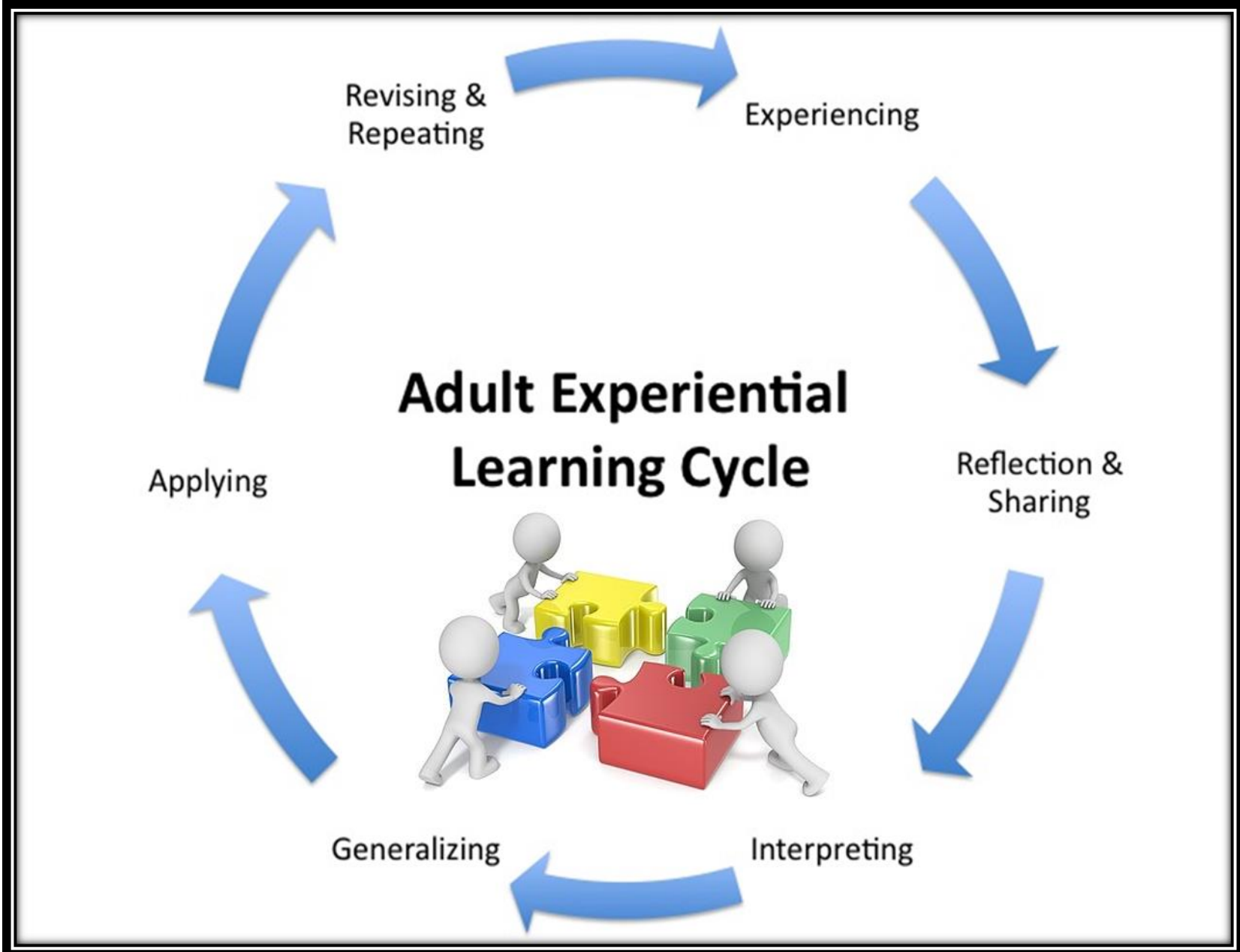
FACILITATE
LEARNING

Capillary blood glucose levels (mmol/L)

	Fasting 	After BF  9am	Before D  3-5pm	After D 	Before 	Comment
Day 1	13.3	18.4	10.5	17.4	13.3	
Day 2	12	14.4	9.0	15.3	10.8	
Day 3	12.1	12.5	9.2	17.2	13.2	
Day 4	10.2	12.4	-		13.2	
Day 5	9.6	8.1	8.6	-	10.5	
Day 6	9.7	12.7	-	-		Start 80mg Gliclazide at dinner.

Capillary blood glucose levels (mmol/L)

	Fasting 	After BF  9am	Before D  3-5pm	After D 	Before 	Comment
Day 1	13.3	18.4	10.5	17.4	13.3	
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Day 3	12.1	12.5	9.2	17.2	13.2	
Day 4	10.2	12.4	-		13.2	
Day 5	9.6	8.1	8.6	-	10.5	
Day 6	9.7	12.7 		-		Start 80mg Gliclazide at dinner.



Capillary blood glucose levels (mmol/L)

	Fasting 🍏	After BF 🍷	Before D 🍏	After D 🍷	Before 🛏️	Comment
Day 1	7.5	12.5	5.5	-	10.1	80mg Gliclazide at dinner.
Day 2	7.7	-	7.1	-	-	Did not take Gliclazide
Day 3	8.4	-	5.5	-	-	80mg Gliclazide at breakfast

4 weeks
F/U

7.3

Weight:84.1kg (*reported home scales was between 82-83kg*).

Weight History:

85.4kg - May 2019.

88kg - April 2019.



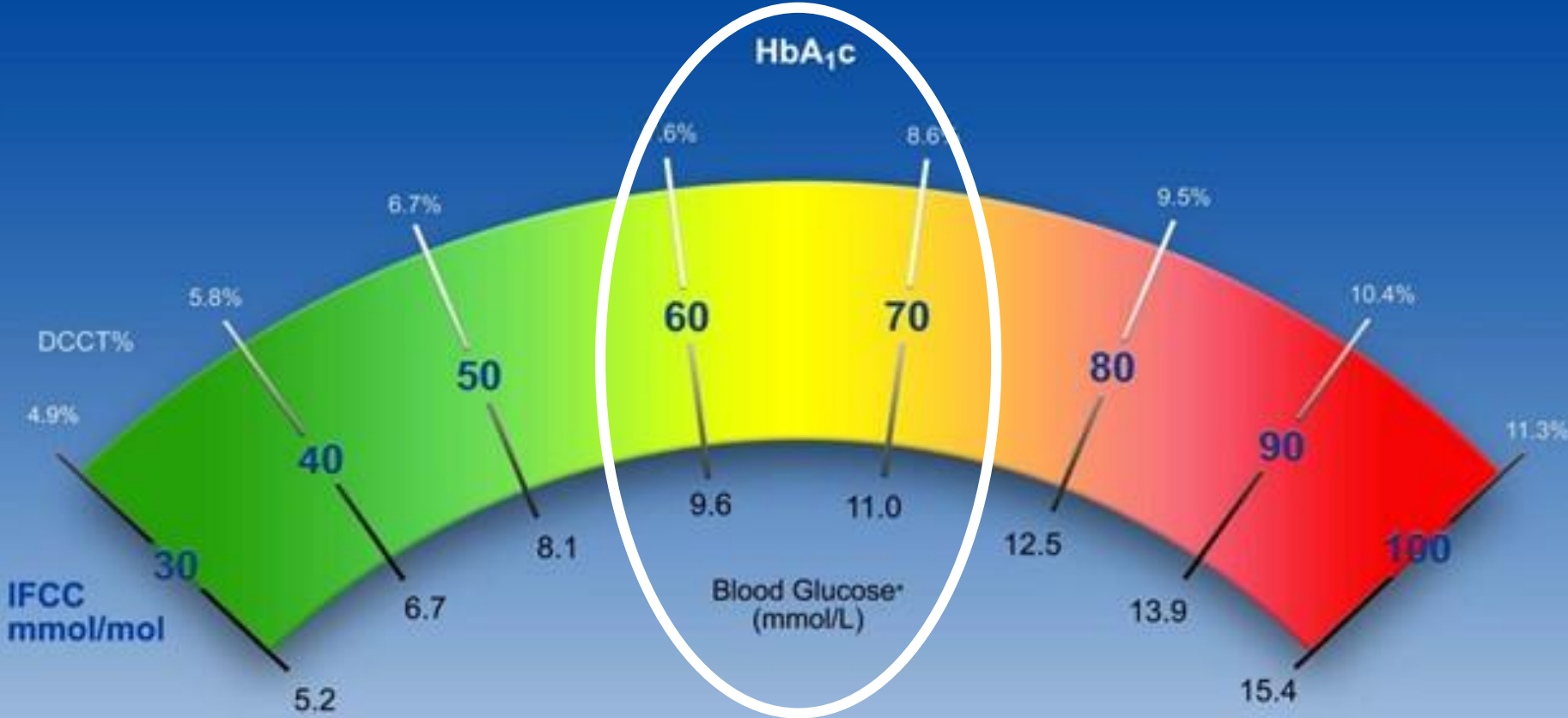
At the clinic. 3 hours after breakfast.

HbA_{1c} as indicator of Diabetes Control



*This is an estimated average glucose (eAG)

HbA_{1c} as indicator of Diabetes Control



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Christchurch Diabetes Centre 2009

		Estimated carbohydrate
Breakfast around 9am	Carbohydrate: 1¼ cup of mixed grains rice/mixed grains congee. Protein: fish. Fibre: a variety of vegetables. (Follow Healthy plate concept)	40-60g
Lunch 12-1pm	Tomatoes.	0-10g
Dinner 3-5pm	Carbohydrate: 1¼ cup of mixed grains rice. Protein: fish. Fibre: a variety of vegetables. (Follow Healthy plate concept)	50-60g
Exercise most days 5:30-6pm	Swimming, sauna, and a hot bath. Changes made: Increase exercise intensity.	
Supper Drinks	Fruit/Milk/Nuts. Water, tea, lemon-flavored water.	0 -20g

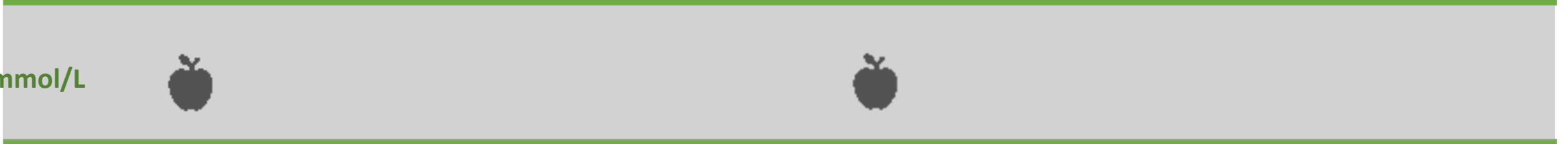
		Estimated carbohydrate
Breakfast 9-10am	Rice porridge + steamed bun or Mixed beans soup + glutinous rice dumplings or Dumplings + eggs or Meat pies/Sausage roll or Beef noodles	60 – 400g
Lunch 12-1pm	Fruits	45-60g
Dinner 4pm	2.5 cups of rice + meat + vegetables	100 – 120g
Exercise 5:30-6pm	Swimming, sauna and hot bath	
Supper	1 cup of milo made with milk	20g
Drinks	Water, tea, lemon-flavored water	

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Lunch 12-1pm	Tomatoes.	0-10g
Dinner 3-5pm	Carbohydrate: 1¼ cup of mixed grains rice. Protein: fish. Fibre: a variety of vegetables. (Follow Healthy plate concept)	50-60g
Exercise most days 5:30-6pm	Swimming, sauna, and a hot bath. Changes made: Increase exercise intensity.	
Supper	Fruit/Milk/Nuts.	0 -20g
Drinks	Water, tea, lemon-flavored water.	

10 mmol/L



6-7 mmol/L



Breakfast
9-10am

Dinner
4pm

Swimming pool
5:30-6pm

Supper
4pm

Estimated CHO

60-400g

45-60g

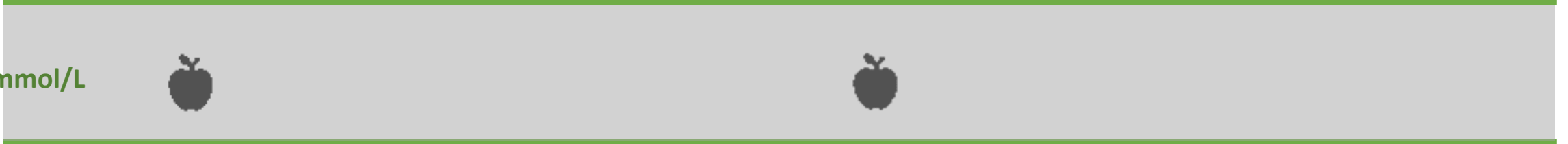
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4 weeks F/U

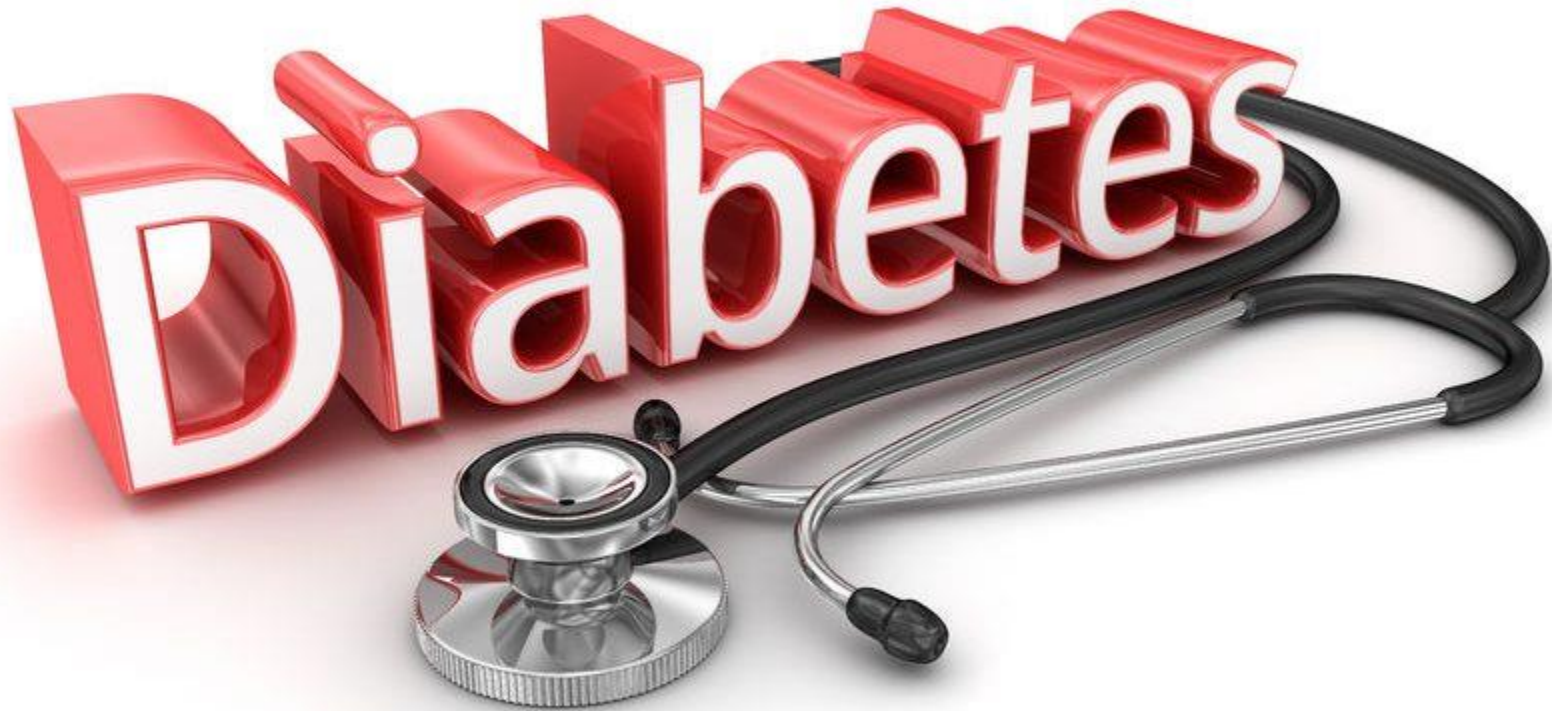
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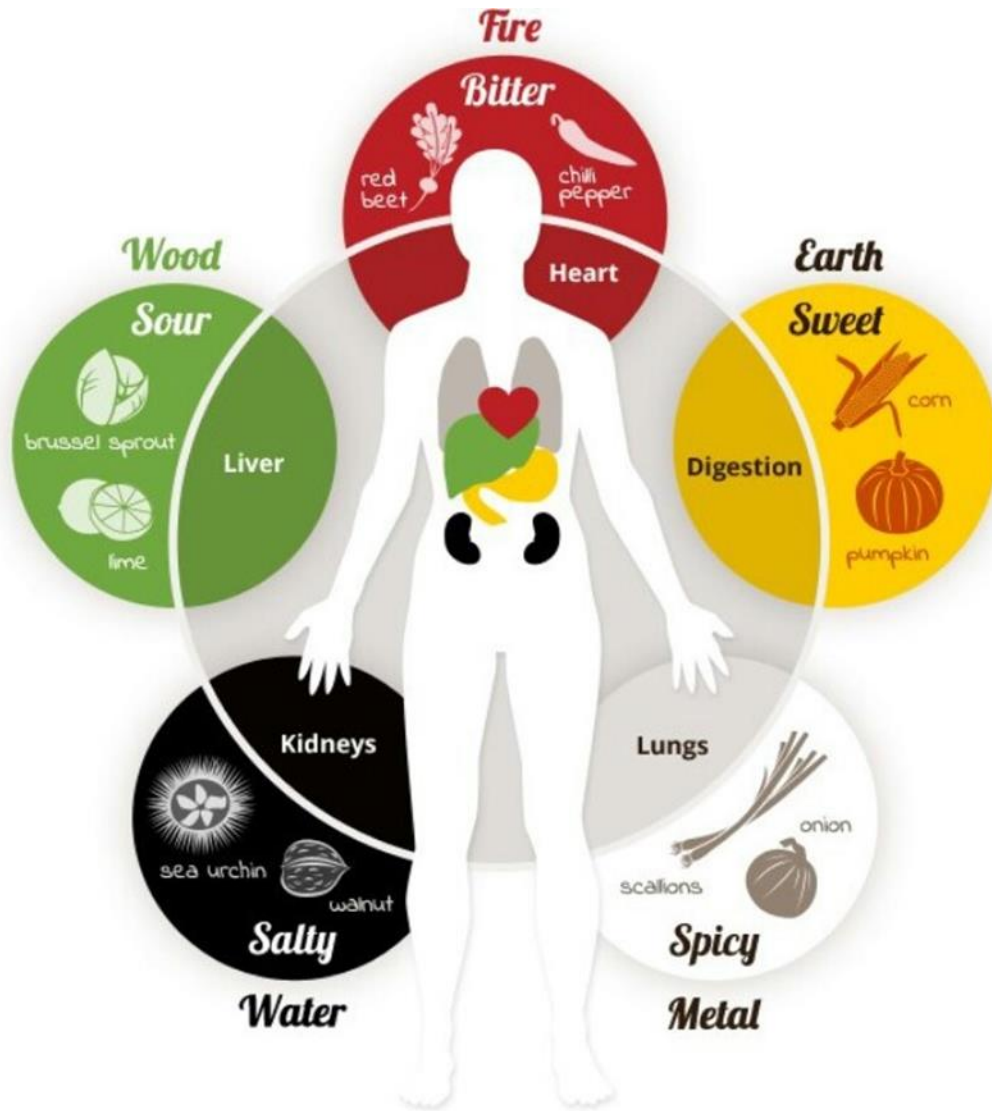
Do I *Really* have Diabetes?



Do I need to take some Nutrition Supplements?



Health Belief



- Food is medicine, medicine is food.
- Traditional Chinese Medicine (TMC) treats the 'root', Western Medicine treats the 'symptoms'.
- Food safety

EAST MEETS WEST



Short-term goals:

1. Improve capillary blood glucose levels with dietary intervention and medication **(Achieved)**.
2. Weigh less at his next follow up appointment.
3. See improvement in HbA1c and blood lipid profiles in his next laboratory blood test.

Long-term goal:

1. Achieve his personal goal weight of 75kg.
2. Manage his blood glucose with lifestyle modification and minimal medication.

Discussion on:

How Gliclazide works on managing blood glucose.

The importance of exercise in weight management and blood glucose management.

- Aim for at least 3 hours of physical exercise weekly.
- Include cardio exercise, weight training, and core muscles strengthening exercise in his weekly exercise routine.
- The role of muscle mass in weight management.

Blood glucose management tips when eating out.

Recommendation:

3-4 smaller carbohydrate meal, spread over the day. This strategy helps to reduce post-prandial blood glucose. Hence needing less medication to control blood glucose.