

Healthy eating for gestational diabetes mellitus



This information has been developed for use in educating women about healthy eating and the dietary management of gestational diabetes.

It should be used in conjunction with a dietary assessment by an accredited practising dietitian.

© State of Queensland (Queensland Health) 2008–2013



This work is licensed under a Creative Commons Attribution No Derivatives 3.0 Australia licence. To view a copy of this licence, visit <http://creativecommons.org/licenses/by-nd/3.0/au/deed.en>.

In essence, you are free to copy and communicate the work in its current form, as long as you attribute the Statewide Diabetes Clinical Network, Clinical Access and Redesign Unit, Department of Health, Queensland Health and abide by the licence terms. You may not alter or adapt the document in any way.

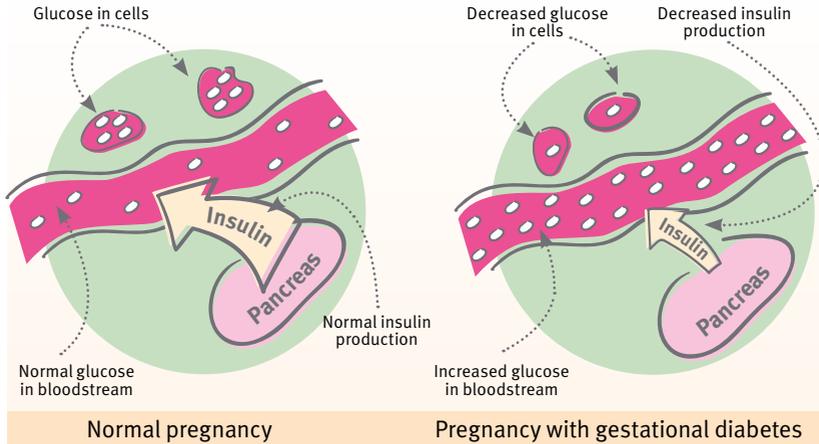
For further information contact the Statewide Diabetes Clinical Network Coordinator, Clinical Access and Redesign Unit, Department of Health, GPO Box 48, Brisbane Qld 4001, email CARU@health.qld.gov.au, phone (07) 3646 9872. For permissions beyond the scope of this licence contact: Intellectual Property Officer, Queensland Health, GPO Box 48, Brisbane Qld 4001, email ip_officer@health.qld.gov.au, phone (07) 3328 9862.

Contents

What is gestational diabetes?	2
Know your carbohydrate foods	4
<i>Carbohydrate free foods</i>	5
<i>Know how many carbohydrates you need</i>	5
<i>What about sugar?</i>	6
Keep active	7
The glycaemic index (GI)	8
Healthy eating guidelines for pregnancy	10
Sample meal plan	12
Healthy weight gain during pregnancy	14
<i>I am gaining weight too slowly. What should I do?</i>	14
<i>I am gaining weight too quickly. What should I do?</i>	15
How will you feed your baby?	16
Continue a healthy lifestyle after your pregnancy	17
Troubleshooting	18
References	19

What is gestational diabetes?

Gestational diabetes is a type of diabetes that occurs during pregnancy due to changes to the normal hormone levels. Diabetes is a condition where the level of glucose (a type of sugar) in the blood is too high.



Food we eat is broken down into carbohydrate, protein and fat, as well as vitamins and minerals. When carbohydrate foods are eaten, these sweet or starchy foods are broken down by the body into glucose and released into the blood. When your blood glucose levels (BGLs) increase, your body releases an increased amount of the hormone insulin. Insulin helps move the glucose out of the blood and into the body's cells where it can be used for energy.

With the hormone changes during pregnancy, sometimes insulin does not act as it should to keep BGLs in the normal range and they increase. If not treated, these high BGLs in pregnancy can cause problems such as a large baby, early delivery, distress for the baby during birth and/or low blood glucose levels in the baby at birth. Poorly controlled BGLs can also increase your risk of developing permanent diabetes (type 2 diabetes) after pregnancy.

Gestational diabetes is usually managed by following a healthy well-balanced eating plan taking into consideration your carbohydrate intake, physical activity, and pregnancy weight gain. If women are unable to manage their gestational diabetes with diet and activity alone, sometimes metformin (tablets) or insulin (injections) are needed. This is not a sign you are doing anything wrong, just that your body needs a little extra help.

Ongoing, regular contact with diabetes educators, dietitians, specialists and attendance at antenatal clinics during pregnancy is important for good BGLs and best outcomes for mother and baby.



Know your carbohydrate foods

- ✿ Carbohydrates are in many foods.
- ✿ It is important to include carbohydrate in each meal and snack.
- ✿ Aim to eat every 2½ to 3 hours.
- ✿ Spread carbohydrates evenly over meals.
- ✿ A good way to measure carbohydrates is to think of them as exchanges that you mix and match over meals.

1 portion/exchange = 15g of carbohydrate

Cereals and grains

1 portion = 1 regular thin slice bread or $\frac{2}{3}$ cup cereal flakes or $\frac{1}{4}$ cup raw oats or muesli or $\frac{1}{2}$ cup cooked pasta/noodles or $\frac{1}{3}$ cup cooked rice or 2–3 plain biscuits/crackers.



Bread



Crackers



Cereal



Rice



Pasta

Starchy vegetables and legumes

1 portion = 1 medium potato or $\frac{1}{2}$ cup mashed sweet potato/potato or $\frac{1}{2}$ cup/cob of corn or $\frac{1}{2}$ cup legumes (e.g. baked beans).



Potato/sweet pot



Corn



Legumes
(e.g. Baked beans)

Fruit (Fresh, canned, or dried)

1 portion = medium apple/orange/pear or $\frac{1}{2}$ large banana or 2 or 3 plums/apricots/kiwifruit or $\frac{3}{4}$ cup diced or tinned fruit or 15–20 grapes/cherries or 1 tablespoon dried fruit or 125ml juice.



Dairy products (not cheese)

1 portion = 1 cup milk (cow or soy) or $\frac{1}{2}$ tub fruit yoghurt (100g) or 1 tub natural or diet yoghurt (200g) or $\frac{1}{2}$ cup custard.



Milk



Yoghurt

Severe dietary restriction is not recommended as this can increase the risk of complications and a small baby. A diet that avoids carbohydrate completely can be dangerous and is not recommended. See pages 10–11 for your overall pregnancy dietary needs.

Carbohydrate free foods

These “free” foods contain very little carbohydrate. They will not raise your BGLs.

Fruit: lemon, lime, passion fruit, berries. All other fruit contains carbohydrates.

Vegetables: all salad and non-starchy vegetables are low in carbohydrates. They are a good group to eat when you are hungry but have already had three to four exchanges of carbohydrate foods.

Protein foods: including meat, chicken, fish, eggs, nuts and cheese.

Fat-based foods: including margarine, oils, peanut butter, avocado, mayonnaise, salad dressings.

Remember, if eaten in large amounts, fat or protein based foods will contribute to excess weight gain in pregnancy.

Know how many carbohydrates you need

It is important to eat the correct amount of carbohydrate at each meal and snack, to help you manage your BGLs throughout the day. Initially, you should aim for around three to four carbohydrate exchanges at main meals and one to two at snack times. Once you see your dietitian with your BGLs this can be individualised to your dietary preferences and needs.

Know your carbohydrate foods *(Continued)*

What about sugar?

Small amounts of sugar, honey, jam or marmalade can be included in your diet.

Artificial (intense) sweeteners are used in some products including diet yoghurts, low joule soft drinks, cordials and jelly. These foods and intense sweetener tablets may be used occasionally. They will not raise your BGLs.

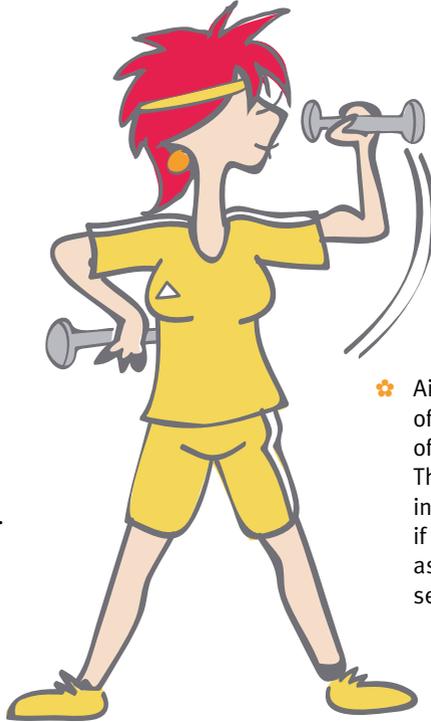
Occasional desserts or sweet foods are acceptable to include, but should be substituted for other carbohydrate foods rather than eaten in addition. For example, if you choose to have dessert such as a small portion of apple crumble, choose meat/fish and salad or vegetables and eat pasta/rice on nights you are not having dessert.

Carbohydrate foods that contain little nutritional value include soft drinks, cordial, fruit juice, lollies or sweets, chocolate, cakes and biscuits. It is wise to avoid these foods.

Keep active

- ✿ Physical activity is an important part of any healthy pregnancy.

- ✿ Being physically active helps to lower your BGLs. The more muscles used in activity the more glucose you use from the blood.



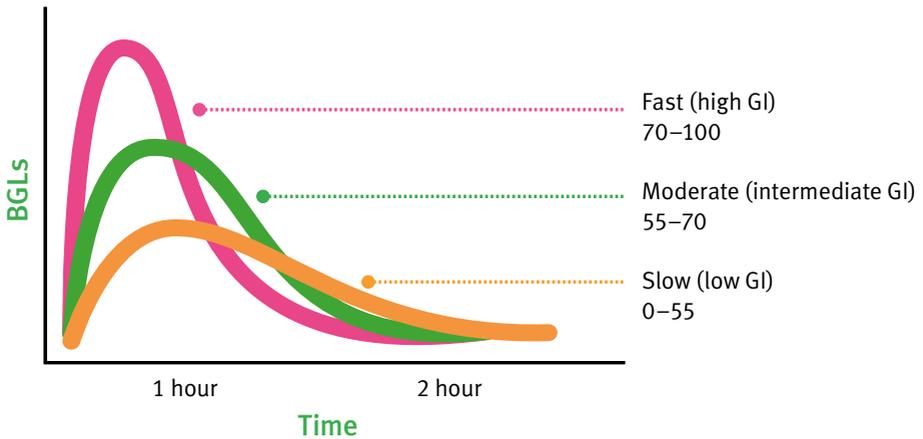
- ✿ Aim for a minimum of 30 minutes of activity a day. This can be done in shorter periods if you wish, such as three 10 minute sessions.

- ✿ There are some medical and obstetric reasons when exercise is not recommended and it is important to know when to stop exercising. Ask your doctor, physiotherapist or midwife for more information on safe exercise in pregnancy.

- ✿ Doing activity after meals will help use up some of the glucose you have consumed.

The glycaemic index (GI)

Carbohydrate foods are broken down at different rates. The glycaemic index (GI) is a tool used in working out how carbohydrate foods affect BGLs. *Exchange size has more impact on BGLs than GI.*



- ✿ **High GI carbohydrates** are broken down quickly and cause a high rise in BGLs.
- ✿ **Medium GI carbohydrates** cause a moderate rise in BGLs.
- ✿ **Low GI carbohydrates** are broken down slowly causing a low rise in BGLs.
These are the best choice.

Choose carbohydrates that are broken down slowly – aim to include at least one low GI food in each meal and snack. Ideally, include mostly low GI carbohydrates in your day.

For more information on GI visit www.glycemicindex.com

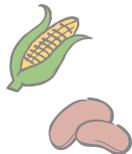
Choose carbohydrates that are broken down slowly

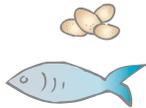
	Low GI (slow acting)	Medium GI	High GI (fast acting)
Breads and biscuits	Fruit loaf/raisin bread Oat bran based bread Pumpnickel bread Soy and linseed bread Multigrain bread Chapatti (Besan flour) Vita wheats™ Ryvita™ (with seeds) Rich tea biscuits Oatmeal or digestive biscuits Snack Right™ (some) Fruit pillow biscuits	Rye bread Crumpets Pita bread Wholemeal roti Ryvitas™ Jatz™	White bread Wholemeal bread Lebanese bread Bagels Puffed crisp breads Water crackers Rice cakes Premium™
Cereals and grains	All Bran™ varieties Guardian™ Special K™ Complete™ Sustain™ Vogel's™ varieties Up'n'Go™ Traditional porridge, oats, muesli Doongara rice Pasta Noodles	Vita Brits™/Weet Bix™ Nutrigrain™ Just Right™ Mini Wheats™ Basmati Rice Taco Shells Vermicelli Egg noodles	Rice Bubbles Cornflakes Sultana Bran™ Coco Pops™ Fruit Loops™ Instant porridge Rice varieties including jasmine, calrose, long grain, white rice, brown rice
Dairy	Yoghurt Milk Custard Soya milk	Full fat ice-cream	
Fruit	Apple Banana All citrus Grapes Kiwi Fruit Peach Nectarine Pear	Sultanas and raisins Apricots Mango Paw Paw Pineapple Rockmelon	Lychees
Vegetables	All legumes/lentils Sweet potato/yam Sweet corn Carisma potato	Nicola potato	Broad beans White potato Desiree potato New potato Sebago potato

Healthy eating guidelines for pregnancy

Not only is it important to monitor your carbohydrates, but it is also important to make sure you are following a healthy diet to meet your nutritional needs during pregnancy. See below for the recommended amounts of foods to eat from each of the food groups to make sure your baby is receiving adequate nutrients for growth and development. If you are hungry after changing your eating habits talk with your dietitian about foods that you can eat freely.

Recommendations during pregnancy are:

Food group	Number of food serves per day	1 serve equals ...
 <p>Vegetables and legumes/beans</p>	5	<ul style="list-style-type: none"> ½ cup cooked green or brassica or cruciferous vegetables ½ cup cooked orange vegetables ½ cup cooked, dried or canned beans, chickpeas or lentils (no added salt) 1 cup raw leafy green vegetables 75g starchy vegetables (e.g. 1 small or ½ medium potato, sweet potato, taro, sweet corn or cassava) 75g other vegetables (e.g. 1 small-medium tomato)
 <p>Fruit</p>	2	<ul style="list-style-type: none"> 1 piece medium sized fruit (e.g. apple, banana, orange, pear) 2 pieces smaller fruit (e.g. apricot, kiwi fruit, plums) 20 grapes or cherries ½ cup 100% juice 1 cup diced, cooked or canned fruit 30g dried fruit (e.g. 1½ tbsp sultanas, 4 dried apricot halves)
<p>Grain (cereal) foods, mostly wholegrain, such as breads, cereals, rice, pasta, noodles, polenta, couscous, oats, quinoa and barley</p>	8½	<ul style="list-style-type: none"> 1 slice of bread ½ medium bread roll or flat bread ½ cup cooked rice, pasta, noodles, polenta, quinoa, barley, porridge, buckwheat, semolina, cornmeal ⅔ cup breakfast cereal flakes ¼ cup muesli 3 crisp breads 1 crumpet or 1 small English muffin or scone ¼ cup flour

Food group	Number of food serves per day	1 serve equals ...
 <p>Lean meat and poultry, fish, eggs, nuts and seeds, and legumes/beans</p>	3½	<p>65g cooked lean red meats (e.g. beef, lamb, pork, venison or kangaroo) or ½ cup lean mince or 2 small chops or 2 slices roast meat</p> <p>80g cooked poultry (e.g. chicken, turkey)</p> <p>100g cooked fish fillet or 1 small can fish, no added salt, not in brine</p> <p>2 large eggs (120g)</p> <p>1 cup (170g) cooked dried beans, lentils, chickpeas, split peas, canned beans</p> <p>170g tofu</p> <p>⅓ cup (30g) unsalted nuts, seeds or paste, no added salt</p>
<p>Milk, yoghurt, cheese and/or alternative (mostly reduced fat)</p> 	2½	<p>1 cup (250ml) milk</p> <p>½ cup (125ml) evaporated unsweetened milk</p> <p>40g (2 slices) hard cheese (e.g. cheddar)</p> <p>200g yoghurt or custard</p>
<p>Discretionary serves for taller or more active women</p>	0–2½	<p><i>Additional serves from the five food groups or</i></p> <p>3–4 sweet biscuits</p> <p>30g potato crisps</p> <p>2 scoops ice-cream</p> <p>1 Tbsp (20g) oil</p>

Sample meal plan

This meal plan is to be used as a general guide and may need adjustment to meet your individual needs.

Meal planning tips: include a low GI food and a protein food at each meal and include a low GI supper each day.

Breakfast

- ✿ ½ cup of uncooked rolled oats or muesli with ½ cup low fat milk **OR**
2 slices of multigrain bread with avocado, tomato, an egg or peanut butter
- ✿ 1 piece fruit or ½ cup of fruit juice

Morning snack

- ✿ 1 piece of fruit **OR**
- ✿ A tub of low fat fruit yoghurt

Lunch

- ✿ 2 slices of multigrain bread or 1 bread roll with fillings
- ✿ 1 piece of fruit or 1 tub of low fat yoghurt

Afternoon snack

- ✿ 4 multigrain cracker biscuits with a low fat spread or tomato and cheese **OR**
- ✿ 1 glass of low fat milk with 2 tsp milo

Main meal

- ✿ 100–150g of lean meat, chicken, fish or eggs (note: no carbohydrate in protein foods)
1 cup sweet potato, sweet corn, or potato
Add plenty of non-starchy vegetables
½ cup of tinned fruit with ½ cup of low fat yoghurt or custard

OR

- ✿ a maximum of 1 cup cooked basmati rice, add vegetables and meats as desired with no other carbohydrate in the meal

OR

- ✿ a maximum of 1 and ½ cups pasta or noodles, add vegetables and meats as desired with no other carbohydrate in the meal

Snacks

Each snack should contain 1–2 exchanges of carbohydrate.

More examples include:

- ✿ 2 wheatmeal or oatmeal biscuits
- ✿ 1 slice of fruit toast

My notes:

Healthy weight gain during pregnancy

Monitoring your weight during pregnancy is important for your own health and your baby's health. Women who gain too much weight during pregnancy are more likely to have longer hospital stays, caesarean sections, high blood pressure and diabetes.

The amount of weight you should gain in your pregnancy depends on your pre-pregnancy weight.

If your pre-pregnancy BMI was:	You should gain:
Less than 18.5kg/m ²	12.5 to 18kg
18.5 to 24.9kg/m ²	11.5 to 16kg
25 to 29.9kg/m ²	7 to 11.5kg
Above 30kg/m ²	5 to 9kg

Pregnancy is not a time for strict dieting.

I am gaining weight too slowly. What should I do?

It is important to have three meals a day, and also have between-meal snacks, such as morning tea, afternoon tea and supper. Include a minimum of two carbohydrate portions/exchanges at each meal.

Good snacks include:

- ✿ fruit toast
- ✿ dried fruit, nuts and seeds
- ✿ yoghurt
- ✿ muesli bars
- ✿ cheese and crackers
- ✿ milk drinks (e.g. milo and milk, milkshakes).

I am gaining weight too quickly. What should I do?

Gaining too much weight when you are pregnant can increase your blood pressure, as well as increase your risk of having a longer hospital stay, a caesarean section, or high blood pressure. To control your weight gain, limit foods that are high in fat and sugar. Make sure you are not 'eating for two'. It is also important to include regular exercise most days.

To help manage your weight during pregnancy:

- ✿ Choose fruit over biscuits, cakes, chips, chocolate and lollies.
- ✿ Use minimal fat in cooking.
- ✿ Choose low fat milk, yoghurt and cheese in place of full fat products.
- ✿ Trim all the fat off your meat before cooking and remove the skin from chicken.
- ✿ Limit high fat take-away foods.
- ✿ Drink water (not soft drink or cordial) and limit fruit juice to one serve a day.
- ✿ Limit intake of desserts and puddings.
- ✿ Minimise snacking.
- ✿ Increase physical activity.

How will you feed your baby?

Mothers are designed to breastfeed babies

- ✿ Breastfeeding is the normal and natural way to feed your baby.
- ✿ Breast milk is a complex food.
- ✿ Breast milk changes to meet the particular needs of each child from the very premature baby to the older toddler.
- ✿ Breastfeeding costs nothing.

Food for health

- ✿ Exclusive breastfeeding (no other food or drinks) is recommended for all babies for the first 6 months of life.
- ✿ Babies should then continue to receive breast milk (along with complementary food and drink) into the child's second year and beyond.
- ✿ Research shows that the longer the breastfeeding relationship continues, the greater the positive health effects, including reducing your risk of developing type 2 diabetes.

Breast milk provides:

- ✿ **Protection for the baby** from infections such as ear, stomach, chest and urinary tract, diabetes, obesity, heart disease, some cancers, allergies and asthma.
- ✿ **Protection for mother** from breast and ovarian cancers, osteoporosis and other illnesses.
- ✿ **Healthier communities and environment.**

Preparing to succeed

- ✿ Research shows that 95–99 per cent of women are able to meet the breast milk needs of their babies.

To ensure a successful breastfeeding relationship you will need:

- ✿ correct, up-to-date information about early skin-to-skin contact and breastfeeding
- ✿ the support of family and friends when you take your baby home.

You can contact the Australian Breastfeeding Association for breastfeeding support or for more information: www.breastfeeding.asn.au or telephone 1800 686 268.

Continue a healthy lifestyle after your pregnancy

After the birth of your baby, your BGLs should return to normal.

It is recommended that you have another oral glucose tolerance test 6–12 weeks after the birth of your baby to ensure that your BGLs have returned to normal. You should also have a fasting glucose test with your GP every two years or as advised by your health care professional.

Women who have had gestational diabetes are at increases risk of developing permanent diabetes (type 2 diabetes) later in life. Up to 50 per cent of women who have had gestational diabetes could develop type 2 diabetes within ten years. This risk increased if they are unable to meet recommended diet and physical activity guidelines.

What can I do to reduce my risk of type 2 diabetes?

- ✿ Breastfeeding helps to improve your glucose tolerance and also reduces the risk for your baby of developing chronic diseases later in life. The longer you breastfeed your baby the less risk you have of developing type 2 diabetes in later life.
- ✿ Continue to follow a healthy well balanced eating plan with plenty of fruit, vegetables and wholegrain cereals.
- ✿ Choose foods low in saturated fat.
- ✿ Keep physically active.
- ✿ Aim to achieve and maintain a healthy weight.

Contact your local community health centre and/or GP to see a dietitian who can help achieve your lifestyle goals.

Troubleshooting

If you have a high BGL it is important to work out why so you can minimise the chance of it happening again. Ask yourself the following questions to help work out why your level might be high.

Were my hands clean?

Always wash your hands prior to testing, dirty hands can affect your BGL reading.

Did I eat a larger meal than usual?

Check your serve sizes against the exchanges list and sample meal plan.

Did I eat too much carbohydrate?

Take care with large serves of bread, pasta, noodles and rice, or a few different types of carbohydrate in one meal — these can increase your BGLs.

Did I have mainly high GI carbohydrate foods at my last meal?

Try to choose slow release (low GI) carbohydrate e.g. grain bread in place of white, high fibre cereal rather than low fibre bread/cereal.

Was I active enough after my meal?

Sitting down immediately after your meal can cause a higher BGL reading than if you do some activity such as a short walk or some housework. Exercise can help to lower your BGL after a meal.

Did I wait long enough after eating before my BGL test?

Different centres recommend different testing times. Your dietitian or diabetes educator will recommend if you need to test one or two hours after your meal. Always wait the recommended time after you eat before testing and delay snacks until after you test. As a rule of thumb, you should leave about 2 ½ hours between meals and snacks.

Have I been taking my diabetes medication as prescribed?

If you have been prescribed insulin or other medication to manage your gestational diabetes missing this medication will cause a high BGL reading.

Am I unwell, less active than usual or stressed?

This can affect your BGL readings as well as the food that you eat.

If your blood glucose levels are still high after going through the checklist above, speak with your dietitian or diabetes educator.

References

1. Menato G, Bo S, Signorille A, Gallo M, Cotrino I, Paola CB, Massobrio M. Current management of gestational diabetes mellitus. Expert review of Obstetrics and Gynecology 2008; 3:1.
2. Australian Guide to Healthy Eating. Commonwealth of Australia, 1998.
3. Commonwealth of Australia. Online [www.healthactive.gov.au/internet/healthactive/Publishing.nsf/Content/pregnant-women] 2006.
4. Institute of Medicine. Nutrition during pregnancy, weight gain and nutritional supplements. Report of the Subcommittee on Nutritional Status and weight Gain during Pregnancy and Lactation, Food and Nutrition board. Washington, DC: National Academy Press 1990:1-233.
5. World Health Organisation. Global Strategy for Infant and Young Child Feeding. World Health Organisation, 2003
6. National Health and medical Research Council. Dietary Guidelines for Children and Adolescents in Australia incorporating the Infant Feeding Guidelines for Health Workers. Commonwealth of Australia, Canberra, 2003.
7. Queensland Health. Optimal infant nutrition: evidence-based guidelines 2003-2008. Queensland Health Brisbane 2003.
8. World Health Organisation. Infant Feeding: The Physiological Basis. 1996. James Akre (ed), WHO, Geneva.
9. Kjos SL, Henry O, Lee RM, Buchanan TA, Mishell DR. The effect of lactation on glucose and lipid metabolism in women with recent gestational diabetes. Obstetrics & Gynecology 1993; 82:3.

