

Maternal Nutrition
Eating for 2, all women should gain and breastfeeding - dispelling the diet myths

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Overview

“Eating for 2?”
 - pregnancy dietary requirements

Diet and breastfeeding
 - matching intake (and physical activity) with requirements

“All women should gain”
 - weight gain guidelines

Breastfeeding
 - why & for how long?



“A natural part of the lifecycle”

- “Low risk” pregnancy
- Limited intervention
- Wellness versus illness approach

➔ Does this extend to lifestyle behaviours?

- Do diet and nutrition-related behaviours during pregnancy influence maternal and infant health outcomes?



Not so natural.....

- Few women meet fruit and vegetable goals¹
fruit: 9.2% vegetables: 2.7%
- Pre-pregnancy overweight/obesity = 30-50%^{2,3}
- 'Diet quality' poorer with higher BMI ranges⁴
- All women should receive advice and support about factors that can influence pregnancy outcomes⁵



Eating for two?

- Pre-pregnancy weight status
- Pregnancy weight gain
- Energy (kJ) requirements
- Nutrient requirements (*that inform*) food groups
- Other key nutritional issues



Overweight and obesity during (& after) pregnancy⁶

overweight: BMI > 25 kg/m²
obese: BMI > 30 kg/m²

- Gestational Diabetes
- Gestational hypertension
- Pre-eclampsia
- Caesarean sections
- Structural birth defects
- Fetal macrosomia
- Perinatal deaths
- Childhood obesity
- Less likely to initiate or continue breastfeeding
- Postpartum anaemia
- More likely to gain excessive amounts of weight
- More likely to retain post partum
- Trajectory of chronic disease

All also complicated by excessive gains



Does knowledge change outcomes?

- Women not advised **3.6** times more likely to fall outside the correct range⁷
- **n= 1537** healthy wt and overweight/obese (pre-preg)⁸
 - n = 1029 healthy weight; 87% accurately perceived wt status
 - n = 508 overweight/obese; 86% accurately perceived wt status

Compared with 'Healthy weight, accurate assessors'

- Healthy weight, over assessors, **2.0** adj.odds of XS gain
- Overweight, accurate assessors, **2.9** adj.odds of XS gain
- Overweight, under assessors, **7.6** adj.odds of XS gain



Why focus on weight? - mum⁹

Excess gain – increased risk of:

- Longer hospital stays
- Caesarean sections
- High blood pressure
- Gestational diabetes
- Weight retention postpartum
- DVT formation
- Higher rates of miscarriage
- Post partum haemorrhage
- Wound infections
- Depression
- Lactation dysfunction

Institute of Medicine guidelines:

If pre-pregnancy BMI was ...	You should gain ...
<18.5 kg/m ²	12.5-18kg
18.5-24.9 kg/m ²	11.5-16kg
25-30 kg/m ²	7-11½ kg
30+ kg/m ²	5-9kg

"Based on your weight at the beginning of pregnancy, this weight gain is recommended for the healthiest pregnancy possible"

Insufficient gain – increased risk of:

- Preterm birth



Why focus on weight? - bub⁹

Excess gain – increased risk for baby of:

- Longer hospital stays
- Caesarean sections/ large babies
- Lower APGAR scores
- Macrosomia
- Foetal anomalies
- Shoulder dystocia
- Double rate of NTD
- Birth complications/still birth
- Ventilatory support post delivery
- Chronic disease in infants (in adult life)

Insufficient gain – increased risk of:

- Preterm birth / SGA
- Perinatal morbidity & mortality



Nutrition for pregnancy & lactation¹⁰

Key nutrients & issues

- Folate
- Energy (and weight gain)
- Protein
- Iron
- Iodine
- Vitamin D
- Calcium
- Omega 3 fatty acids
- Listeria



Focus on Folate^{10,11}

- Neural tube development
- 7/ 10 neural tube defects preventable
- 1/ 500 babies in Australia born with NTD

RDI: preconception 400 µg/d (1+month)

RDI: pregnancy 600µg/d + 400 µg/d (3/12)

RDI: lactation 500µg/d

Good sources?

- green leafy vegetables
- fruit
- orange juice
- legumes
- fortified cereals and bread



Energy Requirements

Weight gain

- Pre pregnancy weight/BMI
- Goal weight gain

Energy requirements

- 1st trimester = no additional requirements
- 2nd trimester = +1400kJ/d
- 3rd trimester = +1900kJ/d
- lactation (both 1st and 2nd 6 months) = +2000-2100kJ/d



Protein & iron

Protein: RDI: 60g/d & 67g/d (46g/d)

Adequate maternal and infant growth

Good sources?

- animal products (meat and dairy)
- legumes (nuts, beans, lentils, chickpeas)

Iron: RDI: 27mg/d & 9mg (8mg/d)

Oxygen transport, growth, development

Good sources?

- red meats, other meat

Other sources?

- fortified breads and cereals (eg Weet Bix™, Special K™), nuts, baked beans/legumes, green leafy vegetables

Improve iron absorption?

- Meat + 'other' source
- Vit C + 'other' sources (e.g. citrus, capsicum, tomato)



Calcium & Vitamin D

Calcium: RDI: 1000mg/d & 1000mg/d (1300mg/d)

Development of bones/teeth; muscle contractions; nerve conduction

Good sources?

Dairy products

Vitamin D: during pregnancy AI: 5µg/d & 5 µg/d (5µg/d)

Calcium absorption; bone development; nephrogenesis; immunity; body size, shape, defects; CNS/growth/immunity (childhood), cancer/schizophrenia (in adulthood)

Good sources?

Sun on the skin
Fortified margarines & milk



Iodine & Omega 3

Iodine RDI: 220µg/d & 270µg/d (150µg/d)

Integral part of thyroxine; Normal growth and development of tissues including brain

Good sources?

Supplements (with iodine - check the label!)
Breads and cereals (now with iodised salt)
Fruit, vegetables, fish, iodised salt

LC Omega 3 fatty acids AI: 115mg/d & 145mg/d (90mg/d)

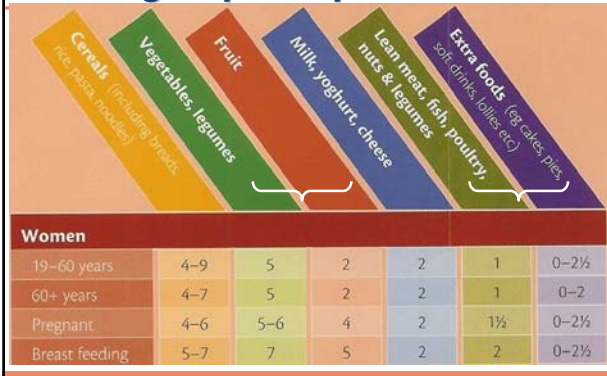
Reduced allergy risk in some populations; Higher DHA levels linked to better neural and visual scores but long term benefits remain uncertain

Good sources?

Oily fish – salmon, herring, mackerel, sardines, anchovies
Supplements



Food group comparison



Listeria¹⁴

- Bacteria that can move into the placenta and can cause premature birth or miscarriage.
- Foods that might carry Listeria and should be avoided include:**
- Raw/uncooked/smoked meat and seafood, ready to eat chilled seafood
 - Deli meats, cooked cold meat, pate, meat spreads
 - Leftovers (more than 24 hours after cooking)
 - Pre-prepared salads, smorgasbords, buffets
 - Unpasteurised milk and soft serve ice cream
 - Soft cheeses (brie, camembert, ricotta, feta, blue). Hard cheese like cheddar and tasty are safe. Processed cheese, plain cream cheese and plain cottage cheese are fine if purchased sealed and stored in the fridge
 - Unwashed raw fruit and vegetables
 - Raw eggs or foods containing raw or partially cooked eggs



Benefits of breastfeeding^{*13}

Infant

- uniquely adapted to growth patterns, nutritional needs and metabolic capabilities
- immunological protection
- psychological benefits
- lower risk of:
 - type 1 diabetes mellitus
 - obesity
 - inflammatory bowel disease & other GI illnesses
 - some childhood cancers
 - coeliac disease
 - Eczema & asthma, esp. with family history
 - Respiratory infections/illnesses

Maternal

- Protection against breast cancer
- Protection against ovarian cancer
- Weight loss post partum
- Decreased risk of Type 2 diabetes mellitus if GDM
- mother-child bond

* exclusively for 6 months, partially until 12 months



Prevalence of breastfeeding

	National Goals	Current stats ¹⁵
Initiate	90%	95%
Exclusively@3/12	60%	55%
Exclusively@6/12	50%	35%

Best predictor - antenatal intention

Compared with women who hadn't decided, those who had were:

- 19 x more likely to initiate breastfeeding
- 5 x more likely to feed to 6 months
- 13 x more likely to feed to 12 months

Less likely if:

- younger less educated
- Aboriginal or Torres Strait Islander



Postpartum weight retention

- The strongest predictor
 - excessive weight gain during pregnancy
 - Also: SES, parity and high pre-pregnancy BMI¹⁶
- Exaggerated by postpartum energy imbalance from:
 - excess intake
 - reduction of energy expenditure
 - a combination of both behaviours¹⁷
- Exacerbated by insufficient time spent breastfeeding
- Contributes to:
 - obesity/chronic disease development
 - problems in subsequent pregnancies
- Not losing preg. weight by 6 months = significant predictor of long-term obesity¹⁸



Summary

- Eating for 2?
 - Only a little more protein and double the fruit
 - Careful food choices
 - Normalising serve sizes
 - Minimising high fat and sugar containing foods
 - Promoting nutrient dense options
- All women should gain?
 - according to their pre-pregnancy BMI
- Breastfeeding
 - well documented benefits
 - women need to feed for longer
 - continue to eat a nourishing diet



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Questions?



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