

Nutrition needs and common dietary concerns in the early years: Dietitians and INFANT in practice

Maternal and Child Health Conference - Friday 27th May, 2022

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NHMRC Infant Feeding Guidelines

Introduce solid food **around 6 months** to meet the infants increasing nutritional and developmental needs

Iron rich foods are recommend to be first foods

Food can be introduced in any order

Appropriate texture

Avoid hard foods to reduce risk of choking

Do not add salt, sugar or honey and avoid sweetened drinks

Avoid nutrient poor foods

<https://www.nhmrc.gov.au/about-us/publications/infant-feeding-guidelines-information-health-workers> page 10-11

Current guidelines and current practices

- NHRMC INFANT Feeding Guidelines – around 6 months
- WHO – around 6 months
- ASCIA – around 6 months, but not before 4 months

- Australian National Infant Feeding Survey (2010) - 35% received solids before 4 months & 92% received solids by 6 months (n=28,759)
- Oz Fits study (2021) – median age of introduction - 5 months
- HSHK Birth Cohort Study (2020) - median age –22 weeks (~5.5 months)

<https://www.aihw.gov.au/reports/mothers-babies/2010-australian-national-infant-feeding-survey/summary>

First Foods

The introduction of solid foods at around 6 months should start with iron-containing foods. Vegetables, fruits, and dairy products can then be added'.

Iron rich foods:

- iron fortified infant cereal
- meat
- fish
- chicken
- leafy green veg
- legumes (beans or lentils)

Other first foods:

- vegetables
- fruits
- Full-fat cheese, milk and yoghurt

Baby Led Weaning

Offer a selection of nutritious finger foods

- Allows infant to control solid food intake
- Only eat what they put in their mouths
- Allows curiosity, play and exploration
- Allows self-regulation

BLISS study showed at 2 years of age

- No difference in growth, iron or energy intake
- No difference in plasma ferritin levels



< Solids



Important tips for using finger foods or BLW approach

- If using BLW as the sole approach to solid feeding ensure that at each meal, you offer your baby:
 - an iron-rich food (e.g., red meat strips, iron fortified infant cereal spread on bread, wholemeal bread, baked beans);
 - an energy-rich food (e.g. cheese, meat, peanut butter, avocado);
 - fruit and/or vegetable.

Infant feeding and allergy prevention

- 1 in 10 Australian infants have a proven food allergy
- The most common food allergens are cow's milk (dairy), egg, peanut, tree nuts, sesame, soy, fish, shellfish and wheat
- To help prevent an allergy, offer common allergy causing foods including peanut butter, cooked egg, dairy and wheat products before turning one.
- This includes infants at high risk of allergy and/or who have eczema.
- Once introduced, continue to offer these foods regularly (twice/week)



<https://www.allergy.org.au/hp//papers/infant-feeding-and-allergy-prevention-clinical-update>
<https://preventallergies.org.au/>

Introducing allergens

What does an allergic reaction look like?

- <https://preventallergies.org.au/identifying-allergic-reactions/>

Food Ideas for specific age groups

- <https://preventallergies.org.au/helpful-tools/food-ideas/>

Information for health professionals

- <https://preventallergies.org.au/healthcare-professionals/>
- <https://www.allergy.org.au/hp>



Egg



Cow's Milk



Wheat



Soy



Peanut



Tree Nuts



Sesame



Fish

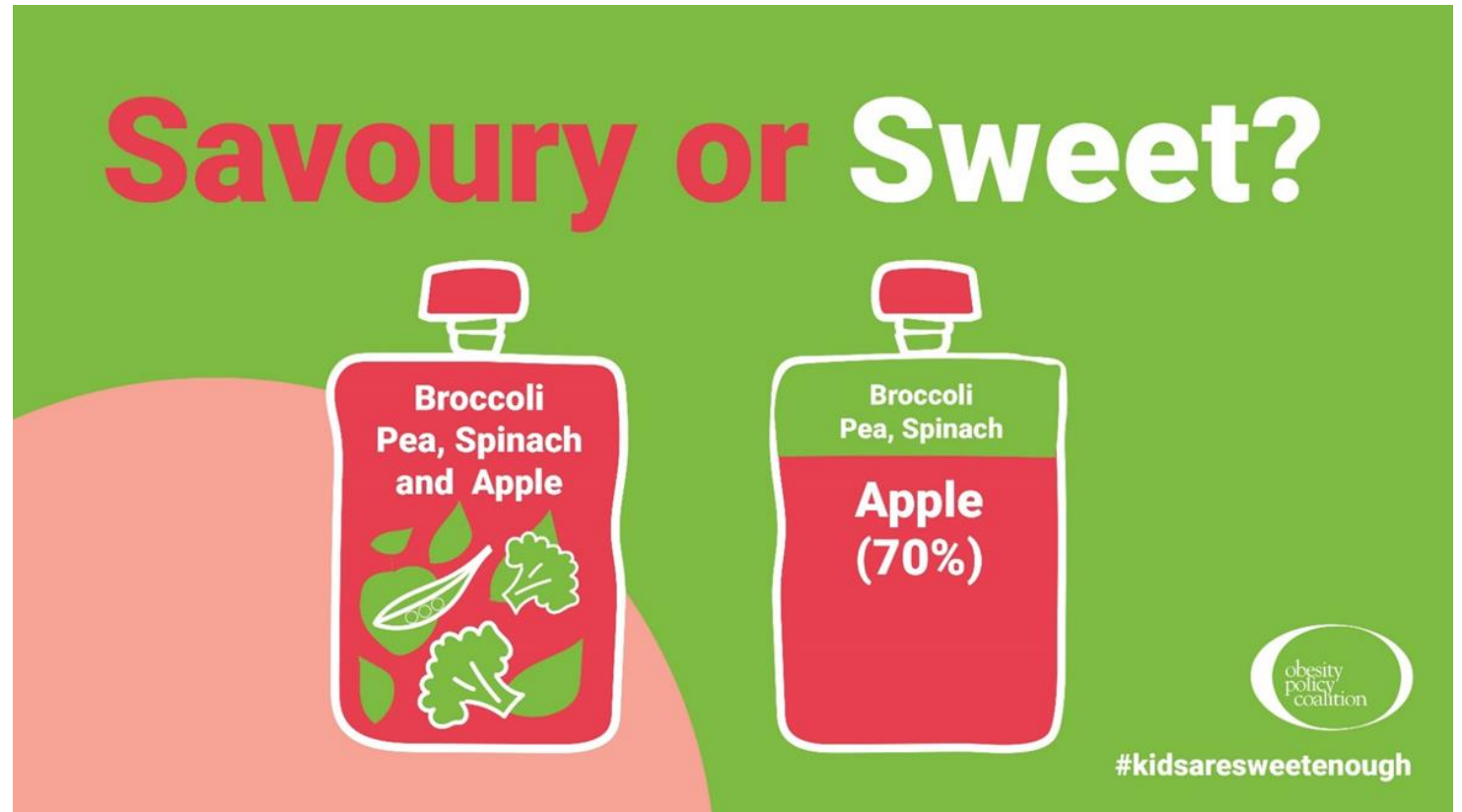


Shellfish

Ready made baby and toddler foods

Food Pouches

- Mostly fruit based
- Multiple ingredients
- Smooth puree texture
- Low in iron
- High in sugar



Dunford et al 2015 & Mouminet et al 2020

<https://www.opc.org.au/kids-are-sweet-enough>

Ready made baby and toddler foods

RCH Child Health Poll

- 73% of parents believe ready-made baby and toddler foods provide good nutrition for their children
- 87% recognise that healthy eating has a life long impact on health
- 53% of parents falsely believe that ready-made baby and toddler foods are tightly regulated in Australia

Convenience

is the number one reason parents choose to give their children ready-made foods



<https://www.rchpoll.org.au/polls/ready-made-baby-foods-do-parents-know-the-facts/>

Baby and Toddler yoghurts



Toddler formula

Cost and nutrition comparison per 100ml			
	Full fat milk Home brand	Toddler milk Stage 3 (12 months+)	Toddler milk Stage 4 (24 months+)
Cost	\$1.29	\$15.49	\$16.49
Energy (kJ)	280.5	240.3	282.5
Protein (g)	3.5	1.9	1.8
Total sugar (g)	5.5	7.0	7.3

If drank daily,
toddler milk formulas would cost

\$280
more per year

than regular fresh milk



If drank daily,
toddler milk formulas include up to

60 teaspoons

of extra sugar
per month



than regular
fresh milk



<https://www.vichealth.vic.gov.au/media-and-resources/media-releases/high-sugar-toddler-milks-overpriced-harmful>

Common dietary patterns

Vegan

Vegetarian

Lactose Free

Intolerances

Gluten Free

Dairy free

Low FODMAP

Allergies

Low carb

Mediterranean

FPIES

Grain free

Intermittent fasting

'Keto'genic

Is a vegetarian or vegan diet safe during pregnancy?

*'...**appropriately planned** vegetarian and vegan diets are healthful, nutritionally adequate and may provide health benefits for the prevention and treatment on certain diseases. These diets are appropriate for all stages of the life cycle including pregnancy, lactation, infancy and childhood...'* – Academy of Nutrition and Dietetics

- Some key nutrients are difficult to obtain from plants alone
- Additional supplements are likely required
- Best to be supported by a dietitian to ensure nutrition requirements can be met with careful planning, monitoring and supplementation

Melina, V.; Craig, W.; Levin, S. Position of the Academy of Nutrition and Dietetics: Vegetarian Diets. *J. Acad. Nutr. Diet.* 2016, 116, 1970–1980. [CrossRef] [PubMed]

Impact of alternative diets

Nutrients of concern during infancy

Vegetarian

- *Energy/growth*
- *Fibre*
- *Iron*
- *Zinc*
- *Iodine*
- *Vitamin B12*
- *LC-PUFA's*

Vegan

- *Energy/growth*
- *Fibre*
- *Iron*
- *Zinc*
- *Iodine*
- *Vitamin B12*
- *LC-PUFA's*
- *Calcium*
- *Protein*

Cow's Milk Protein Allergy

- *Calcium*

Dietary modification – iron

Vegetarian and vegan diets

- Fortified cereal – Infant/Weet-bix – 1-1.5mg
- Egg - 1.8mg (if vegetarian)
- Kidney beans/chickpeas/lentils – 1.8mg (per ½ cup)
- Tofu - 3mg (per ½ cup)
- Tahini – 1.4mg (per 1bs)
- Spinach 3.0mg (per cup cooked)
- Fortified bread 0.9mg (per slice)



Iron RDI

Babies 7-12 months	11mg/day
Children 1-3 years	9mg/day
Pregnant and breastfeeding women	27mg/day



<https://www.betterhealth.vic.gov.au/health/conditionsandtreatments/iron>
<https://raisingchildren.net.au/guides/a-z-health-reference/anaemia>

Vegetarian resources – infants & pregnancy

SAMPLE VEGETARIAN MEALS FOR BABY 6-9 MONTHS OLD

Meal time	Food and Drink
EARLY MORNING	Breastmilk or infant formula
BREAKFAST	Breastfeed/formula first, followed by iron fortified infant cereal mixed with breast milk or formula and soft fruit
MORNING SNACK	Wholegrain toast and smooth nut butter
LUNCH	Breastfeed/formula first, followed by soft tofu or cooked eggs with mashed broccoli and carrot
AFTERNOON SNACK	Full fat plain yoghurt and soft fruit e.g. pear, stewed apple, berries
DINNER	Breastfeed / formula first, followed by pureed lentils with pumpkin and carrot
BEFORE BED	Breastmilk or infant formula



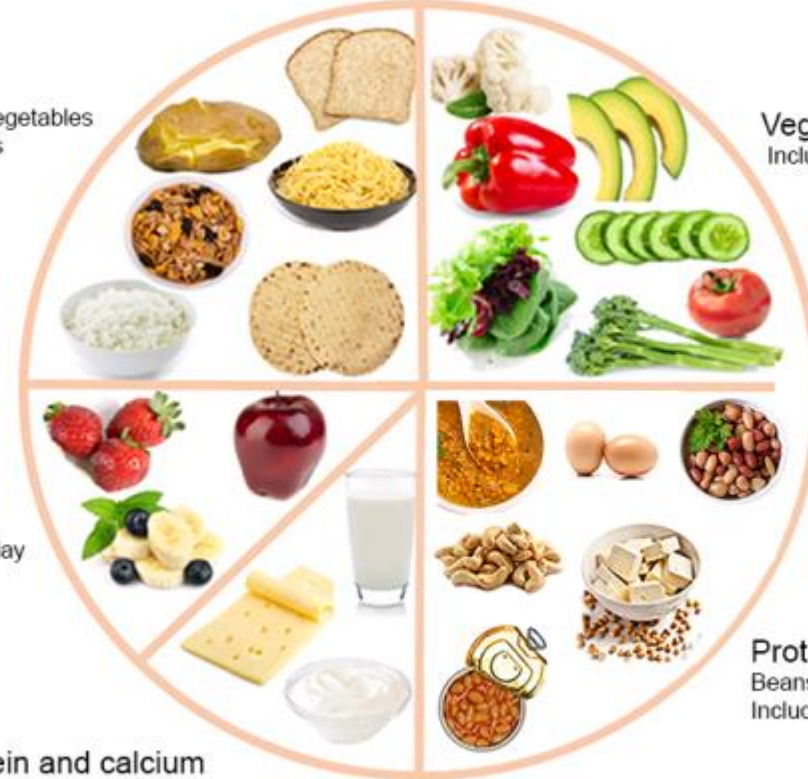
SAMPLE VEGETARIAN MEALS FOR BABY 9-12 MONTHS OLD

Meal time	Food and Drink
EARLY MORNING	Breast milk or infant formula
BREAKFAST	Iron fortified infant cereal or oats porridge cooked with breast milk or formula with cut up fruit (e.g. strawberries, peaches, kiwi). Breast milk or infant formula
MORNING SNACK	Cooked vegetable sticks with smooth nut butter or hummus dip; cheese slices; fresh fruit, such as thin slices of apples, orange segments, berries
LUNCH	Brown rice with pumpkin, spinach and tofu or eggs Breast milk or infant formula
AFTERNOON SNACK	Wholegrain toast fingers with cheese or vegetable dip
DINNER	Baked tofu and sweet potato with steamed cauliflower Breast milk or infant formula
BEFORE BED	Breast milk or infant formula

'Healthy eating when you're pregnant: information for vegetarians and vegans' Royal Women's Hospital 2021

Carbohydrates
Grains and starchy vegetables
Include in most meals

Vegetables and salad
Include in at least 2 meals per day



Fruit
2 serves per day

Protein and iron
Beans, lentils, tofu, nuts, eggs
Include in at least 2 meals per day,

Protein and calcium
Dairy foods and fortified alternatives
Have 2 to 3 serves per day

<https://www.thewomens.org.au/health-information/pregnancy-and-birth/a-healthy-pregnancy/food-nutrition-in-pregnancy#Vegetarians>



Dietary modification – B12

Very difficult to meet Vitamin B12 requirements

- Fortified plant milks soy/oat/pea – 1mcg/cup
- Nutritional Yeast - 0.5mcg/2tbs
- Salt reduced Vegemite – 0.5mcg/teaspoon
- Vegie Delight Sausages – 1mcg each

Vitamin B12 RDI

Babies 7-12 months	0.4 mcg (AI)
Children 1-3 years	0.9 mcg
Pregnant and breastfeeding women	2.6 mcg 2.8 mcg



Baroni L, et al. Vegan Nutrition for Mothers and Children: Practical Tools for Healthcare Providers.

<https://www.health.gov.au/resources/pregnancy-care-guidelines/part-c-lifestyle-considerations/nutrition-and-physical-activity#112-nutritional-supplements>

Dietary modification – dairy

Replace with non-dairy sources of calcium

- Fortified plant milks soy/oat/pea (120mg/100ml)
- Almond butter – 70mg per tablespoon
- Coconut yoghurt – 113mg per 100g
- Calcium enriched tuna – 1070mg per 100g
- Broccoli 45mg (1 cup cooked)
- Spinach 100mg (1 cup cooked)
- Tofu 250mg per 150g



Calcium RDI

Babies 7-12 months	270 mg
Children 1-3 years	500 mg
Pregnant and breastfeeding women	1,000 mg 1,300mg (<18 years)

ASCIA food allergy e-training: <https://etraininghp.ascia.org.au/food-allergy>

ASICA factsheets for dietary avoidance

<https://www.allergy.org.au/patients/food-allergy/ascia-dietary-avoidance-for-food-allergy>

When to refer on to a Dietitian?



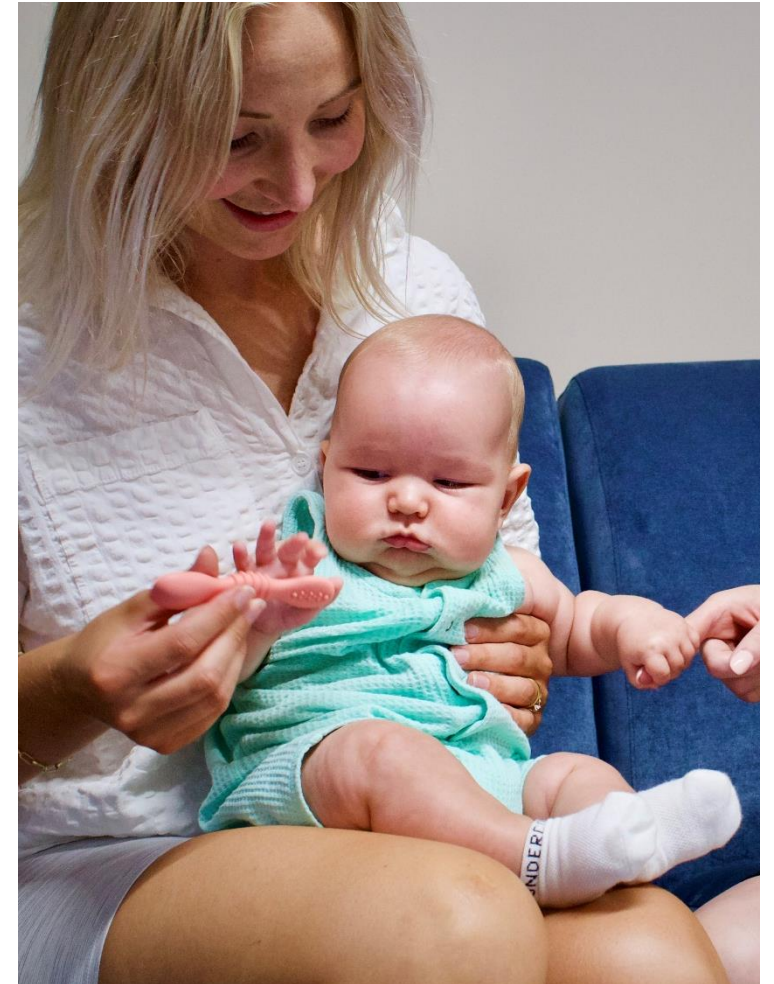
- Suboptimal growth / underweight
- Food allergy / medically necessary additional dietary restrictions
- Excessive reliance on milk feeds in infants (lack of complementary food)
- Additional dietary restrictions without medical need
- Questions around supplementation
- Maternal disordered eating pattern or maternal malnutrition
- Gestational diabetes
- Questions around pregnancy nutrition

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- Netting, M.J. et al. The Australian Feeding Infants and Toddler Study (OzFITS2021): Breastfeeding and Early Feeding Practices. *Nutrients* 2022, 14, 206.
- NHMRC (National Health and Medical Research Council) (2013). *Infant Feeding Guidelines: Summary*. Canberra: National Health and Medical Research Council.
- Taylor, R. W., Williams, S. M., Fangupo, L. J., Wheeler, B. J., Taylor, B. J., Daniels, L., ... & Heath, A. L. M. (2017). Effect of a baby-led approach to complementary feeding on infant growth and overweight: a randomized clinical trial. *JAMA pediatrics*, 171(9), 838-846.
- Williams Erickson, L., Taylor, R. W., Haszard, J. J., Fleming, E. A., Daniels, L., Morison, B. J., ... & Heath, A. L. M. (2018). Impact of a modified version of baby-led weaning on infant food and nutrient intakes: the BLISS randomized controlled trial. *Nutrients*, 10(6), 740.

INFANT in Mildura

- INFANT has been running in Mildura since 2013
- Partnership between Mildura Rural City Council and SCHS
- First session delivered at New Parent's Group
- Health Promotion Dietitians facilitate
- 15-20 NPG per year (3 month session)
- Groups run on Wednesday mornings
- Sessions held at the Family & Child hub





INfant Feeding, Active play and NuTrition (INFANT) in practice

Kathy McConell - State-wide Implementation Coordinator



WHAT IS INFANT?

Infant feeding active play and nutrition



Four group sessions for parents at 3,6,9 and 12 months with anticipatory guidance around feeding, play and limiting sedentary time.

My Baby Now, a mobile phone app provided from birth to 18 months reinforcing key messages.

Why INFANT?

Healthy habits early in life

- important for optimal growth and development
- prevention of chronic disease later in life
- health trajectories – established in first 1000 days of life

World first - intervention that has lasting effects

- Supporting new parents with babies up to 18mths, sustained benefits to at least five years of age

Group sessions can reduce 1:1 consultation

- address feeding concerns, anticipatory guidance on introducing solids
- social connection between parents and local services

INFANT builds on existing systems, e.g., first session of INFANT can be the last session of the FTPG

New parents – responsive to parenting information and support

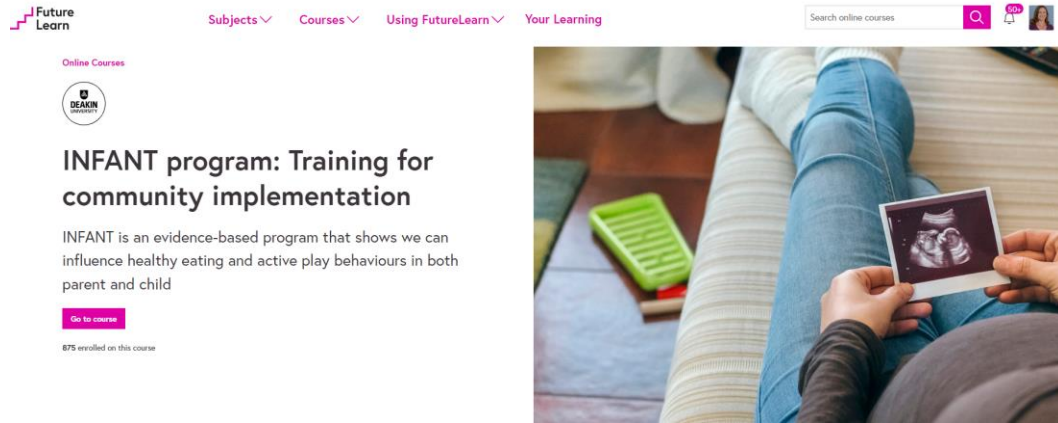


Enhancing INFANT implementation

- The Department of Health is providing funding to the Institute for Physical Activity and Nutrition (IPAN) at Deakin University to enhance implementation of INFANT across Victoria
- The evaluation of the rollout – supported by NHMRC partnership grant
- Victorian Government's [Healthy Kids, Healthy Futures plan](#)
 - five-year action plan to support children and young people to be healthy, active and well
 - INFANT is a key action for Priority 3: Supporting children and families



INFANT training



The screenshot shows the FutureLearn website interface. At the top, there are navigation links for 'Subjects', 'Courses', 'Using FutureLearn', and 'Your Learning'. A search bar is visible with the text 'Search online courses'. Below the navigation, the 'INFANT program: Training for community implementation' course is featured. The course description states: 'INFANT is an evidence-based program that shows we can influence healthy eating and active play behaviours in both parent and child'. A 'Go to course' button is present, and it indicates that 875 people are enrolled in the course. To the right of the text is a photograph of a person's legs in blue jeans sitting on a couch, holding a small white card that displays an ultrasound image of a fetus.

- Online over 4-6 weeks; 8 hrs
- Free to MCHNs, dietitians, HPOs, managers, family support workers, social workers
- Next training 25 July – 19 August
- Annual refresher training – 1.5 hours online over 2 weeks

Register via the INFANT website:

<https://www.infantprogram.org/facilitator-training/>



Support Resources

INFANT Implementation

Purpose of this plan
By following the prompt actions and pathways for template to submit a draft

Who should complete it
We ask that you work with a draft an implementation devising an implementation

Feedback from the INFANT
Prior to offering INFANT the INFANT State wide C will be available to you

1. LGA CONTEXT

Name of LGA
Location
Total population
Births per year

2. MODEL OF DELIVERY
Who will be the lead? Consider which org

Role/s

- Promotion
- Referral/recruitment
- Enrolling parents
- Scheduling session
- Sending parent resources
- Facilitating session
- Evaluating

Read more about various Online training: [step 2-8 Implementation Guide.pdf](#)

INFANT implementation

**Address: <XX X
Email: <XX@XX
Phone: < (03) X**

INFANT was developed and is led by the IPAN available across Victoria has been enabled (GMT1363223) and the Victorian Department

Parent Handout: 3 Month session www.infantprogram.org



Want the latest information

Top tips for babies 3-6 months

Feeding is a learning curve



Breastmilk is all baby needs until around 6 months of age and commercial infant formula is the only safe alternative.

It takes time to get to know your baby's hunger and fullness signs. These signs guide when and how much/how long you feed.

Your baby will also show you when they are ready to start solids, usually around 6 months of age. Some signs that they are ready to start solids include:

- holding their head up and able to sit with some support
- reaching out/opening mouth and/or putting their hands in their mouth when you eat
- they are still showing hungry signs after a breast/formula feed
- no longer stick tongue out when food is put in their mouth ('extrusion reflex')
- chewing and biting movements

Colour every meal with veg & fruit



Including veg and fruit in all your meals is great for your health and gives your baby the right idea about healthy eating.

When introducing solids,

- start with iron rich foods e.g. iron fortified baby cereal, legumes (such as baked beans or lentils), meat, fish, chicken and leafy green vegetables.
- Offer veg first and then fruit so they can learn to enjoy both. Cook hard veg and fruit and offer mashed or as finger foods.

Off and running



- Aim to give your baby 30 minutes of tummy time spread throughout the day.
- Venture outside for a pram walk and avoid screens (which can overstimulate your baby and make it hard for them to sleep).



Forums

The aim of the forum is to provide a place for you, as INFANT implementers, to share your experiences and learn from each other as you implement INFANT.

You may have similar challenges and barriers to setting up and running INFANT, and this community of practice will be an opportunity for you to connect with each other and discuss these together. We encourage you to tell stories about what's happening in your area and support one another with what's working and what's not working.

› Forums

 Search

Facilitator Forum	Topics	Posts	Last activity
Community Implementation Discussions related to INFANT set-up, models of delivery, promoting INFANT sessions, and monitoring/evaluation.	3	10	8 months, 2 weeks ago Kerri Curran
Facilitating INFANT Sessions Discussions related to the practicalities of facilitating INFANT: engaging parents, group dynamics, and questions/discussions about session content and activities.	3	6	4 weeks ago Adelaide Giddens
Introductions A place to introduce yourself to the community.	95	113	21 hours, 55 minutes ago Kaitlin Bott





How can INFANT can better support families from priority populations?

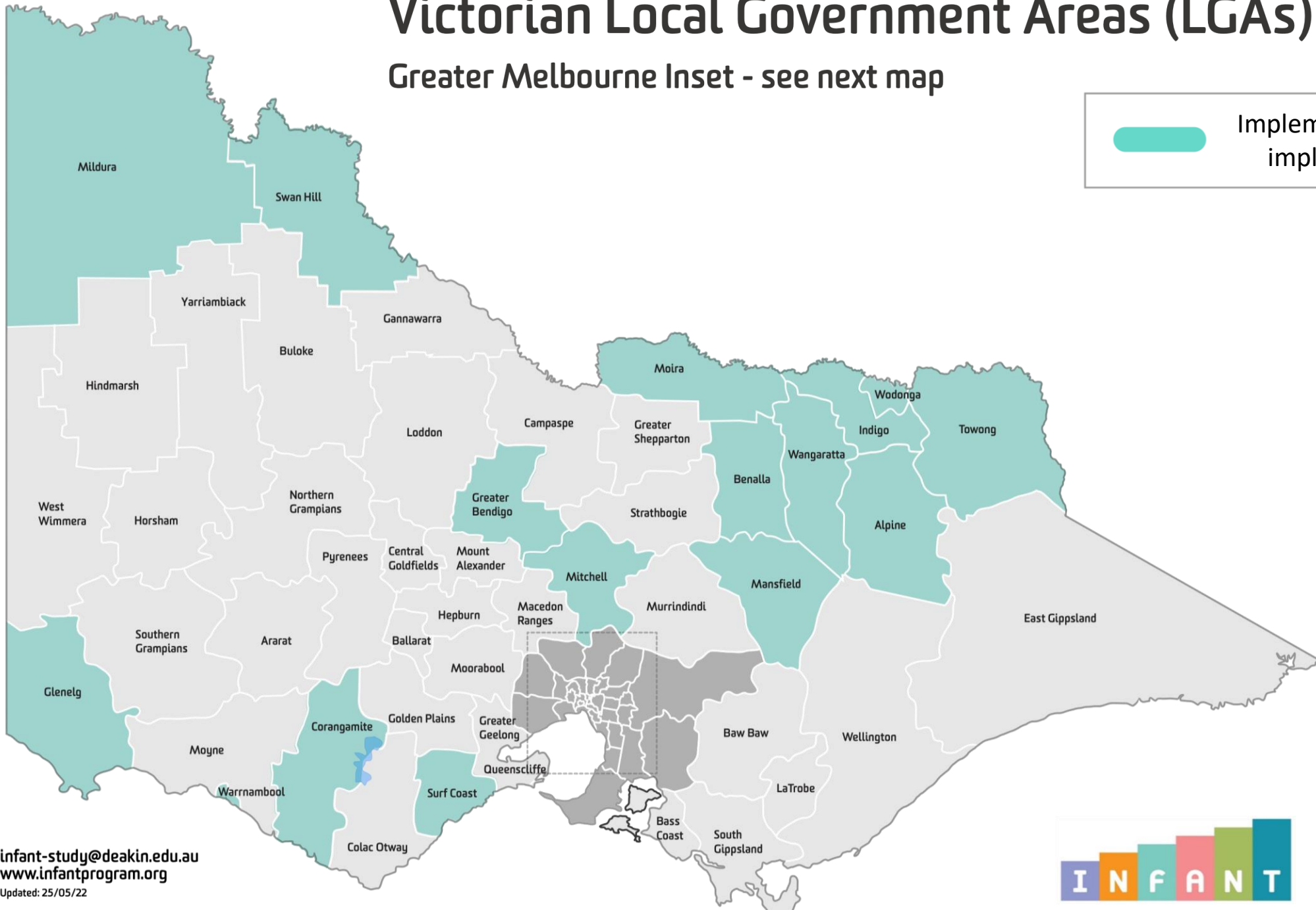
- We'd love to hear your insights and experiences
- 20-45 min phone call at a time that suits you, before July
- Find out more <https://redcap.link/prioritygroups>



Victorian Local Government Areas (LGAs)

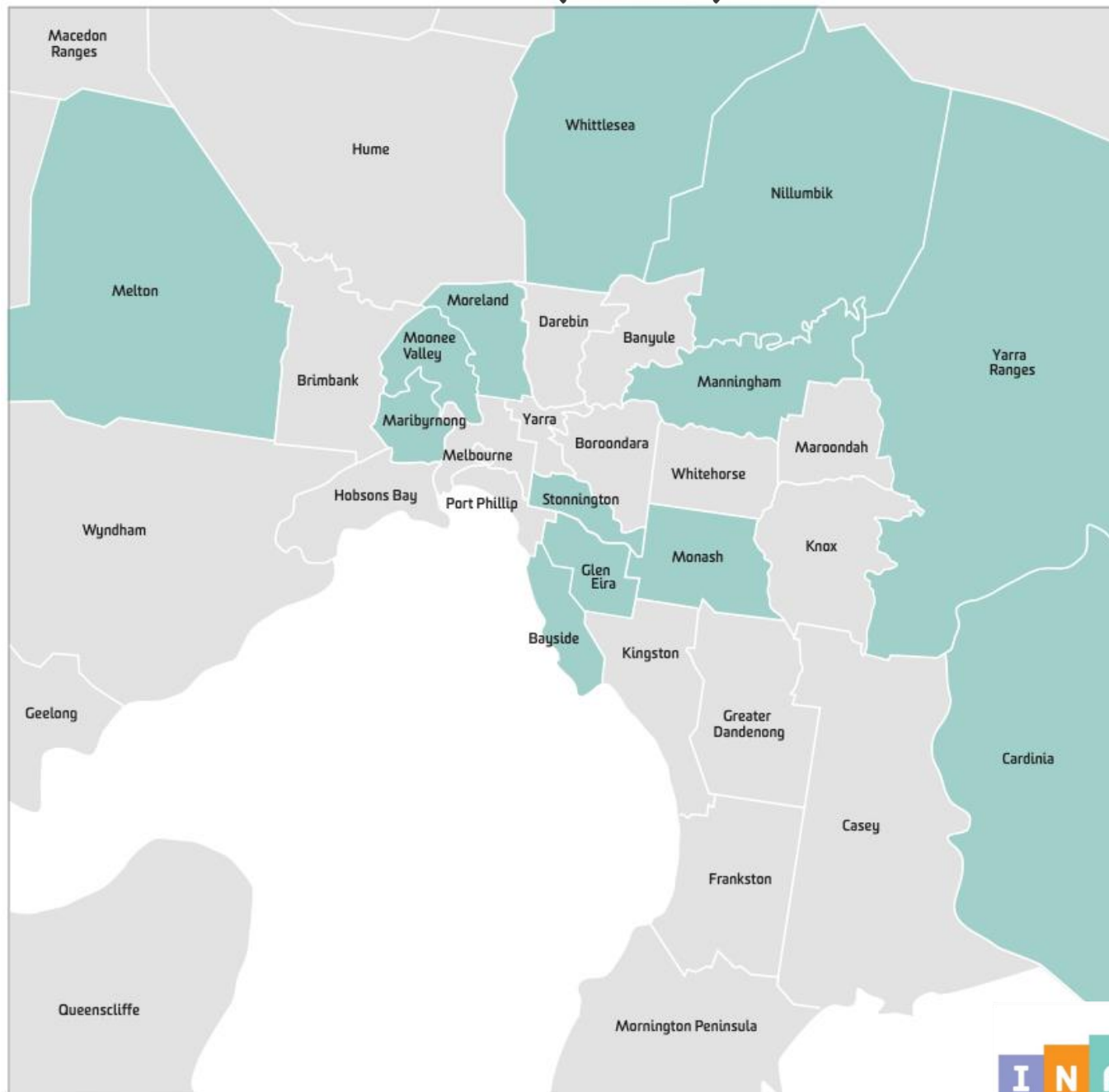
Greater Melbourne Inset - see next map

 Implementing INFANT or implementing soon



Victorian Local Government Areas (LGAs)

Greater Melbourne



Implementing INFANT or implementing soon



In summary

INFANT group sessions provide

- Anticipatory guidance
- Social and community connection

Core business – offering healthy eating and active play advice

Research, testing and adapting for over 10 years – it works, behaviour changes sustained after five years

A suite of resources to assist with implementation

Over half of Victorian LGAs are implementing or on the way



Implementation support

State-wide Implementation Coordinators



Anthea Gregoriou



Kathy McConell

Infant-study@deakin.edu.au

