

## EVIDENCE SUMMARY

# INFANT AND EARLY YEARS FEEDING ADVICE TO SUPPORT CHILDREN TO LEARN TO EAT AND ENJOY VEGETABLES

This evidence summary is for Maternal, Child and Family Health Nurses (MCaFHNs). The purpose is to outline two evidence-informed feeding strategies to support young children's liking of vegetables. This advice, supported by government policy and guidelines, can form the basis of practical recommendations provided by MCaFHNs to carers of children to foster a love for and liking of vegetables. This evidence summary will provide background context and outline the evidence underlying development of the advice statements.

**1**

### Repeated Exposure

For young children it can take time to learn to like a new food, including vegetables. Keep offering vegetables, even if rejected. It may take 10 or more times before a new vegetable is liked.

**2**

### Variety

Help children to learn to like and eat vegetables by offering a variety of vegetables everyday as part of snacks and main meals.

Only 6% of Australian children aged 2-17 years of age eat the recommended amount of vegetables [1].

Research shows that disliking vegetables is the key factor associated with children's low intake. Using a robust scientific approach, two advice statements have been expertly designed to support guideline developers and those involved in practice to encourage children's liking of vegetables in early life.

An in-depth review of current Australian feeding guidelines for young children highlighted an opportunity to strengthen and reinforce the existing advice by including these evidence-based practical strategies on how to encourage liking of vegetables in the early years.

**MCaFHNs play a critical role in improving the nutritional intake of children in their first years of life.**

Advice provided to families and carers by MCaFHNs lays the foundation for children to develop a love for and liking of vegetables. These evidence-informed statements provide useful and practical advice that can be readily communicated to families and carers to encourage liking, and increase intake, of vegetables in young children.

## BACKGROUND

### What is the issue?

Vegetables are essential for children's healthy growth and development, yet most children fail to eat the recommended amounts. Only 6% of Australian children aged 2-17 years of age eat the recommended amount of vegetables [1]. Low vegetable intake has implications for health across the life course, including an increased risk of chronic diseases [2,3] and overweight and obesity [4,5].

The first years of life are critical in developing food preferences, with habits, likes and dislikes established early [6-8]. It is crucial that the behaviour of eating vegetables is fostered in young children [9,10] to support healthy growth, development and lifelong dietary habits.

Disliking vegetables is a key factor associated with children's low intake. Current guidelines provide information about what to eat, but lack evidence-based advice about how to foster enjoyment of vegetables. There is opportunity to complement current infant and childhood feeding guidelines with practical advice on how to encourage liking of vegetables in the early years of life.

### How is the issue being addressed?

VegKIT aims to increase the vegetable intake of Australian children. A collaboration between CSIRO, Flinders University and Nutrition Australia, and financially supported by Hort Innovation, VegKIT provides an integrated nation-wide approach to improving children's vegetable intake.

The objective of the project is to deliver an integrated program of research and development activities to increase children's vegetable intake.

One of the key activities of the project has been to identify opportunities to promote young children's enjoyment and liking of vegetables.



## DEVELOPMENT OF NEW ADVICE

To inform development of the new advice, a comprehensive approach has been undertaken to understand the evidence and current guidelines related to maternal, infant and childhood vegetable feeding and intake. This approach involved the following steps:

**Figure 1: Steps to developing advice statements to support children's liking of vegetables**

- 1 STEP 1.** Science review
- 2 STEP 2.** Advice review
- 3 STEP 3.** Advice statement development
- 4 STEP 4.** Stakeholder consultation & engagement
- 5 STEP 5.** New advice statements produced

## Step 1: Science Review

A review was conducted to determine the effectiveness of sensory and behavioural strategies on increasing young children's vegetable acceptance [11]. The evidence from 11 systematic reviews (published 2015-2019) containing 85 unique primary studies was synthesised [12-22].

Overall findings and strategy effectiveness were categorised according to strength with the strongest referred to as 'promising' (comprising a large and consistent body of moderate quality evidence).

The strategies that were identified as having promising evidence were:

- Repeated exposure to vegetables led to reliable increases in young children's intake.
  - Nine reviews [12-13, 15-17, 19-22] comprising 29 unique studies reported on repeated exposure as a strategy. Findings were consistent across reviews showing that repeated exposure to vegetables led to small, yet reliable increases in children's intake.
- Exposure to a variety of vegetables was positively related to an increase in children's vegetable liking.
  - Six reviews [12, 18-22] comprising 60 unique studies reported on exposure to a variety of vegetables. A consistent positive effect of vegetable variety was found on increasing vegetable liking and intake with a greater effect seen with exposure to a greater variety of vegetables.



## Step 2: Advice Review

Current Australian guideline and recommendation documents encouraging children's vegetable intake in the early years were analysed for advice relating to promoting young children's vegetable intake.

18 relevant documents were sourced from national, state and local stakeholder websites relating to maternal, infant and early years guidance and advice [24-40]. Examples include the Australian Dietary Guidelines and Infant Feeding Guidelines (NHMRC), Get Up & Grow Healthy Eating and Physical Activity for Early Childhood (Commonwealth Department of Health) and Caring for Children Birth to 5 years (NSW Ministry of Health).

Opportunities to improve advice to foster young children's liking of vegetables were collated. It was found that the majority of advice regarding repeated exposure and variety was too brief and not specific to vegetables.

The key gaps in advice that were identified are:

- Repeated exposure: four of the 18 documents refer to repeated exposure as a strategy to increase young children's liking of vegetables and current advice could be reinforced with further practical detail and by being specific to vegetables.
- Variety: six of the 18 documents provided specific detail and practical advice regarding variety as a strategy to increase young children's liking of vegetables and current advice could be strengthened with further detail regarding why variety is important.



### Step 3: Advice Statement Development

Science review findings were extracted and mapped against a framework of factors influencing vegetable liking in the first years of life. The framework was generated by integrating and adapting a complementary feeding framework (what, when, how of eating) [41] and a food choice development framework [42] with a focus on the sensory and behavioural strategies to improve children's liking of vegetables as key predictors of intake.

A set of 30 evidence-informed messages were developed with the framework applied to the science review findings.

### Step 4: Stakeholder Consultation and Engagement

A group of experts were consulted across maternal and child health and development, psychology, sensory science, education and nutrition and a prioritisation and consensus process was applied to the evidence-informed messages developed in step 3. The messages were then ranked according to 'High', 'Medium' and 'Low' priority. The messages were further prioritised according to relevant area of advice adoption: Policy and Practice, Research, and Industry.

### Step 5: New Advice Statements Produced

Based on data produced in steps 1, 2 and 4 above, two new advice statements to support children's liking of vegetables in the early years of life were produced and identified as relevant to government policy makers and those involved in practice (such as MCaFHNs). The advice has been identified as the most effective based on 'promising evidence' within the science review (step 1), a gap in current feeding guidelines (step 2) and identified as 'high' priority by the expert panel (step 4).

The evidence-informed advice statements are:

**1**

#### Repeated Exposure

For young children it can take time to learn to like a new food, including vegetables. Keep offering vegetables, even if rejected. It may take 10 or more times before a new vegetable is liked.

Example: A child may need to be offered capsicum slices as a snack or cooked broccoli with their dinner on more than 10 occasions before they accept the vegetables. It is important to persevere and keep offering vegetables. The more a child is exposed to the vegetable the more likely they will accept it.



#### Note:

Only a small amount of vegetables each time is needed to build acceptance, equivalent to the size of a 10c piece. It is important that carers and parents remain neutral when vegetables are rejected.

**2**

#### Variety

Help children to learn to like and eat vegetables by offering a variety of vegetables everyday as part of snacks and main meals.

Example: A child could be provided with carrot, cucumber and celery with a morning snack, corn and green beans with lunch and peas, cauliflower and Brussel sprouts with dinner. The greater the variety of vegetables provided to a child throughout the day and in each meal, the greater the likelihood they will accept vegetables in general.

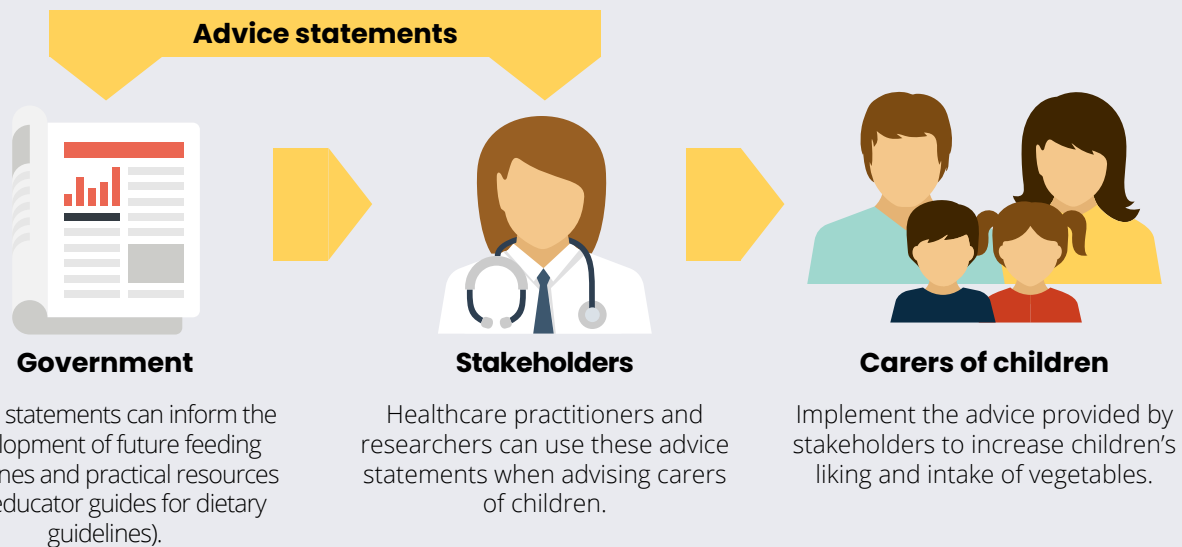
## THE ROLE OF HEALTHCARE PRACTITIONERS

Healthcare practitioners such as MCaFHNs play a critical role in disseminating practical feeding advice that encourages liking and increases intake of vegetables in young children.

Supported by national and state feeding guideline documents and resources, the

evidence-based advice, can be readily utilised by researchers and communicated to carers by healthcare practitioners (e.g. MCaFHNs). Carers of young children are then supported and equipped with the useful and practical strategies required to help children learn to enjoy and eat vegetables.

**Figure 2: The role of healthcare practitioners (e.g. MCaFHNs) in disseminating evidence-based feeding advice statements to carers of children.**



## RECOMMENDATIONS FOR HEALTHCARE PRACTITIONERS

Considering the gap between recommendations and the current intake of vegetables in Australian children, in conjunction with the health, social, environmental and economic benefits of eating more vegetables, addressing low intake in children is a public health priority.

These evidence-informed statements, supported by government guidelines and resources, provide useful and practical advice that can be readily communicated to families and carers to encourage liking, and increase intake, of vegetables in young children.

**For more information visit [VegKIT.com.au](https://vegkit.com.au).**

Practical advice and strategies provided to families and carers by health care practitioners (e.g. MCaFHNs), lays the foundation for young children to develop enjoyment for and liking of vegetables.



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