

make every bite count

A communication program
about Australian red meat
and sustainable eating

Introduction

'Make every bite count' (MEBC) is a communication program that provides practical information about eating red meat in a sustainable diet.

This report describes insights that indicate food knowledge and skills to 'make every bite count' is a framework for providing portion guidance, the key to sustainable eating.

The program uses the 'make every bite count' framework to provide practical information, described in this report, including smart shopping, nutritious choices, balanced and leftover meals.

- Resources, providing bite-sized practical information in easily accessible formats and channels, help food educators to communicate practical information.
- Food educators include dietitians, chefs, butchers and sustainable producers.
- Practical information targeting key life stages makes it easy to buy, prepare and serve recommended amounts of red meat in balanced meals.

The report describes Australian red meat consumption patterns within the context of national public health policy and highlights the importance of food knowledge and skills for understanding the role of Australian red meat in a sustainable diet.

Practical information and underpinning evidence explain how to provide guidance on eating recommended amounts of red meat in three to four balanced meals a week.

Approach



Definition of sustainable eating: Considers impact of a healthy diet on the environment and economic and social factors, including affordability, accessibility and acceptability¹.



Insights: Derived by connecting scientific and behavioural evidence and consulting with dietitians from a range of professional settings in a 'test and learn' activity. Attitudinal studies, including qualitative and quantitative studies², explored popular sources of information and relevant topics about sustainable eating with consumers and health care professionals.



Evidence: Derived by aligning Australian red meat consumption patterns with national public health policy^{3,4} and Australian Dietary Guidelines⁵.

‘Make every bite count’ insights

The following insights indicate food knowledge and skills to ‘make every bite count’ is an engaging, actionable way to provide portion guidance for sustainable eating.

Portion size is important for health and the environment

Eating a diet in line with Australian Dietary Guidelines provides a nutritionally adequate diet and reduces the impact of overconsumption on health and the environment.

Portion guidance provided as practical information is engaging and actionable

Practical information makes it easy to buy, prepare and serve balanced meals and reduce food waste, while nutrition information provides reassurance.

‘Make every bite count’ is an easy heuristic

Practical information to ‘make every bite count’ empowers people to manage trade-offs and make sustainable choices.

Red meat practical information

‘Make every bite count’ is a framework for practical information that makes it easy to buy, prepare and serve recommended amounts of red meat in balanced meals three to four times per week.



Smart shopping

Purchase weight for three to four meals a week is a handy guide for describing recommended amounts.



Nutritious choices

Tips for choosing and preparing lean mince and other cuts in popular meals makes it easy to choose affordable options.



Balanced meals

Inspiring balanced meal imagery is an engaging way to provide portion guidance and increase intake of vegetables and legumes, important for gut health and chronic disease prevention.



Leftovers

Tips for reducing the impact of food waste is good for the environment and the wallet.



Red meat consumption and public health policy

- Australian red meat consumption is stable and in line with amounts recommended for meeting iron and zinc requirements as part of a nutritionally adequate diet⁶⁻⁸.
- Maintaining red meat consumption in line with amounts recommended for a nutritionally adequate diet and a healthy weight reduces the impact of overconsumption on health and the environment⁹⁻¹⁰.
- Recommending red meat consumption in balanced meals increases vegetable consumption, important for reducing chronic disease risk^{5,11-14}.

Insights

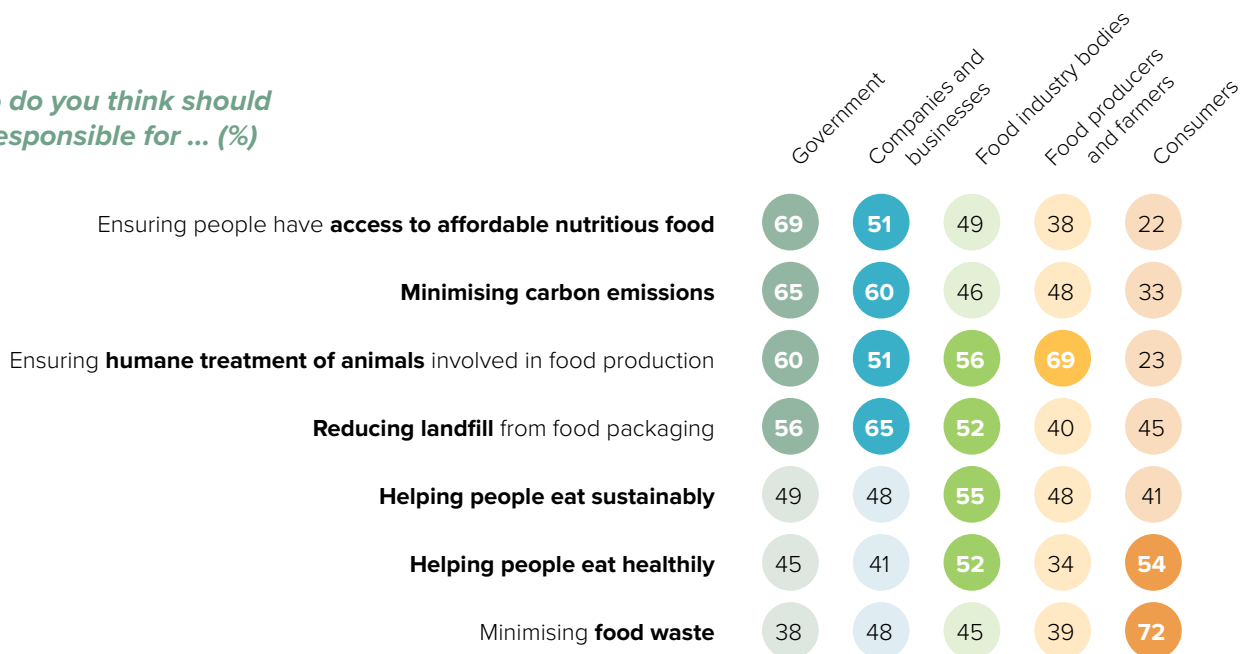
The following insights indicate food knowledge and skills to ‘make every bite count’ is an engaging, actionable way to provide portion guidance for sustainable eating.

1 Portion size is important for health and the environment

Eating a diet in line with Australian Dietary Guidelines provides a nutritionally adequate diet and reduces the impact of overconsumption on the environment and health^{5,15}.

- Sustainable eating is important to 9 out of 10 Australians and 73% want to know small steps they can take towards practising sustainable eating by eating healthily and minimising food waste².
- Portion guidance in line with Australian Dietary Guidelines ensures a nutritionally adequate diet, a healthy weight and reduces the amount of excess food consumed, a key determinant of the footprint of the diet. The more we eat, the more resources are needed to produce food and the more food is wasted.
- The impact of swapping higher for lower footprint alternatives is small and agricultural strategies are required to achieve a climate neutral diet and avoid trade-offs^{9,15}.
- Knowing what industries are doing to be sustainable informs choices, providing reassurance that macro sustainability issues are being addressed; and 70% of Australians say that it motivates them to practise sustainable eating².

Who do you think should be responsible for ... (%)



Q. Thinking about food production, shopping and eating in Australia, who do you think should be responsible for each of the following? (n=1000 Australians aged 18-64 years)².

Consumers want government and food industry to help them eat sustainably and healthily by supplying affordable, nutritious foods.

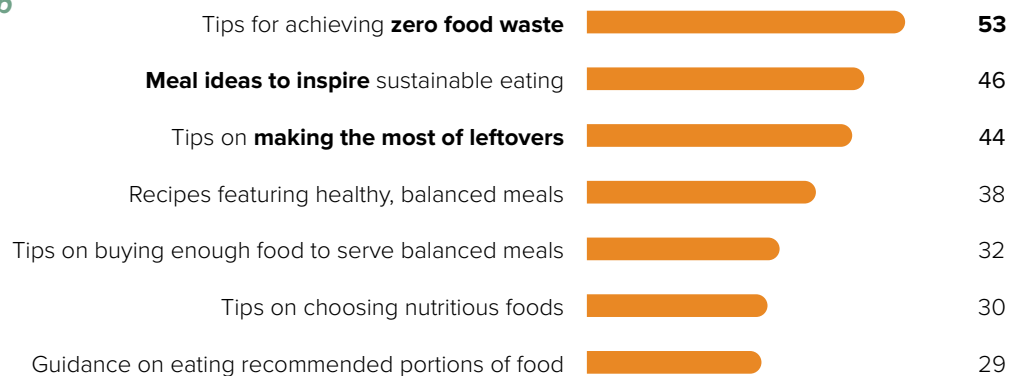
2

Portion guidance provided as practical information is engaging

Practical information makes it easy to serve balanced meals and reduce food waste, while nutrition information provides reassurance.

- Most decisions about sustainable eating are made within the context of “What’s for dinner?”
- Inspiring meal ideas and practical tips make it easy to decide, buy, prepare, and serve balanced meals and reduce food waste.
- People use nutrition information to confirm their decisions and choices because they generally think their diet isn’t too bad.

Useful information to help you achieve sustainable eating (%)



Q. When it comes to sustainable eating, which of the below would be useful in helping you achieve this? (n=1000 Australians aged 18-64 years)².

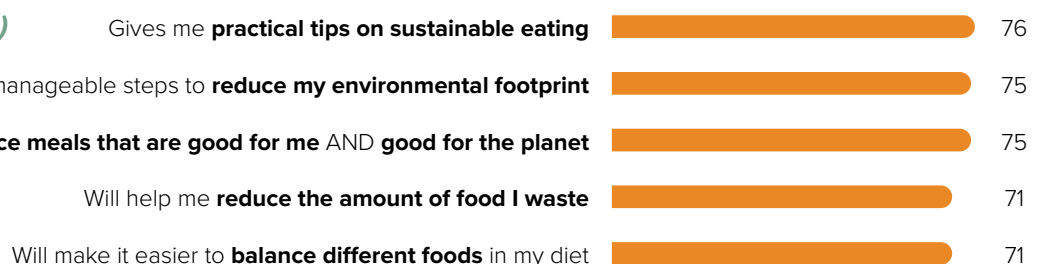
3

‘Make every bite count’ is an easy heuristic

Practical information to ‘make every bite count’ empowers people to manage trade-offs and make sustainable choices.

- People use trade-offs to make choices; and cost and enjoyment are key barriers to sustainable eating².
- ‘Make every bite count’ (MEBC) empowers Australians to make everyday choices with 66% across all life stages agreeing “I can see myself applying this to the way I eat”².
- The framework provides a total diet approach with Australians expressing interest in receiving tips and tricks to ‘make every bite count’ across all food groups.
- Inspiring meal ideas makes it easy to serve balanced meals that everyone will enjoy.
- Tips to reduce food waste provides an easy way to make decisions that are good for their wallet and the environment.

Attitudes to MEBC across all life stages (%)



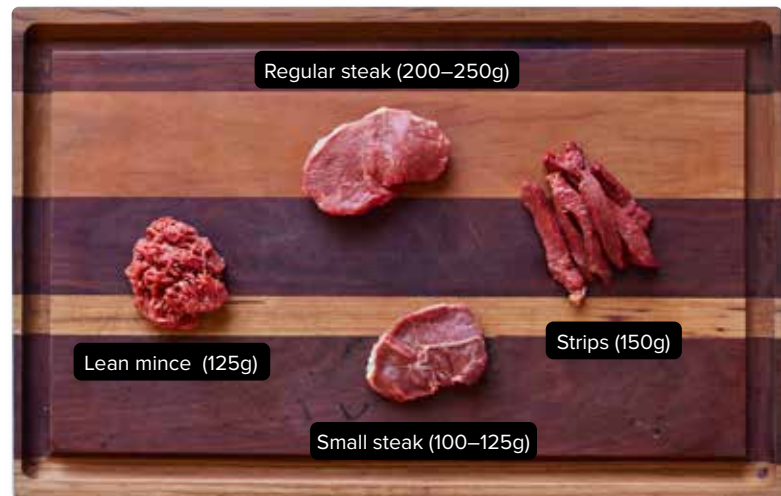
Q. How much do you agree or disagree with the following statements about the ‘Make every bite count’ guide? (n=1000 Australians aged 18-64 years)².

Red meat practical information

Smart shopping

Purchase weight for three to four meals a week is a handy guide for describing recommended amounts.

- Decisions about portion size are typically made when buying raw meat.
- Choices are typically made according to number of serves per meal, typically 100 to 200g (raw weight) per person^{16,17}.
- Describing recommended amounts as portion sizes for three to four meals a week aligns dietary recommendations with typical eating practices.



Recommended portion sizes for three to four balanced meals equivalent to 650g per week*

**Raw weight equivalent to 455g per week lean, cooked red meat as recommended in the Australian Dietary Guidelines⁵.*

Nutritious choices

Tips for choosing and preparing lean mince and other cuts in popular meals makes it easy to choose affordable options.

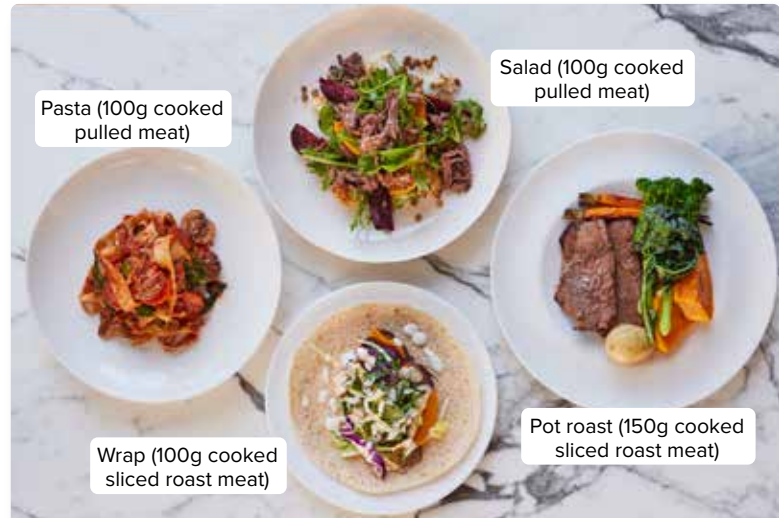
- Red meat is a confusing term and recommending popular cuts provides reassurance that affordable cuts are nutritious choices and provide 'more than steak' inspiration.
- Cost is a key driver of choice and cooking tips are important because less expensive forequarter cuts taste better with long, slow cooking methods.
- Other inexpensive and versatile cuts include lean mince, diced meat, strips, and rump steak.



Balanced meals

Inspiring balanced meal imagery is an engaging way to provide portion guidance and increase intake of vegetables and legumes, important for gut health and chronic disease prevention ⁵.

- Meal imagery is an easy way to illustrate recommended portion sizes for cooked meat in popular meals.
- Lack of vegetable and legume consumption is a risk factor for chronic diseases and balanced meal imagery is an inspiring way to promote their consumption.



Recommended portion sizes for three to four balanced meals equivalent to 455g per week*

* Cooked weight as amount recommended in the Australian Dietary Guidelines ⁵.

Leftovers

Tips for reducing the impact of food waste is good for the environment and the wallet.

- Food waste accounts for 3% of Australia's annual greenhouse gas emissions ¹⁸.
- The amount of food wasted is around 7.6 million tonnes, equivalent to \$2,000 to \$2,500 per household per year ¹⁸.
- Purchasing, cooking and storage tips help consumers to enjoy healthy, balanced meals and avoid food waste.
- Tips for using leftovers reduces food waste and provides readily available ingredients, such as leftover roast meat and vegetables for quick and easy balanced meals.



Australian red meat consumption and public health policy

1

Australian red meat consumption and a nutritionally adequate diet

Secondary analysis of data from the Australian Bureau of Statistics (ABS) National Nutrition Surveys conducted in 1995 and 2011–12^{6,7}; agricultural and retail studies on nutrient composition of beef, veal, lamb, mutton and goat meat¹⁷; and studies on popular meals, cuts and portion sizes describes Australian red meat consumption^{16,17}.

Findings show maintaining consumption in line with recommended amounts (455g cooked lean red meat per week) is important for preventing iron deficiency in early childhood and young women⁸.

- Australian red meat consumption trends are stable and in line with amounts recommended for a nutritionally adequate diet and a healthy weight in Australia⁵⁻⁷.

Portion size

Average 150g (raw weight).
Range from 100–250g

Frequency

Three to four meals a week, mainly in evening

Average intake

59g per day (1995);
57g per day (cooked weight) (2011–12)

Popular cuts

65% consumed as lean

- Prevalence of iron deficiency continues to be an issue for 20% of young women¹⁹, 30% of infants²⁰ and up to 18% of toddlers^{20,21}; and the role of red meat as a key dietary predictor of both iron and zinc deficiencies is well established^{8,22-25}.



Aligns with Australian Dietary Guidelines⁵

- **Definition:** Red meat includes beef, lamb, veal, pork, goat or kangaroo; and all types of cuts including lean mince and lean (lower salt) sausages.
- **Recommended amount:** 65g cooked lean red meat per day (455g per week, equivalent to 650g raw weight (30% moisture loss).
- **Rationale:** Amounts recommended for a nutritionally adequate diet and a healthy weight based on Nutrient Reference Values (NRV)²⁶ and typical Australian eating patterns⁸. Dietary modelling indicates 65g cooked lean red meat per day contributes to an adequate intake of iron and zinc (limiting nutrients in the Australian diet) as well as high quality protein, vitamin B12 and omega-3 fatty acids⁸.

2

Australian red meat consumption and the environment

Life cycle assessment studies and dietary modelling, using Australian data and a total diet approach identify opportunities to reduce the impact of red meat consumption on the environment.

Findings show maintaining lean red meat consumption in line with amounts recommended in Australian Dietary Guidelines for a nutritionally adequate diet and a healthy weight reduces the impact of overconsumption on health and the environment.

- The amount of food consumed determines the environmental impact of the diet across all indicators, including climate, water and cropland scarcity^{9, 27-29}. The CSIRO evidence considered the impact of the Australian diet on several indicators, including climate, water and cropland scarcity. The findings showed that energy intake explains almost half the environmental impact of the diet¹⁵.
- Agricultural strategies are more effective ways to reduce impact on the environment rather than food 'swaps'¹⁵. Modelling showed that the impact of swapping higher environmental impact foods for lower impact alternatives was modest because there are few foods in the Australian diet that have low impacts across all environmental indicators¹⁵. For example, plant-based protein alternatives to beef have higher water scarcity footprints, while poultry and pork have higher cropland scarcity impacts. Only two foods are currently considered climate neutral, rice and lamb⁹.
- Australian red meat production consists of pasture-raised and grain-finished systems. All production systems have the capacity to lower emissions by improving their production efficiency. The exact strategies a farm may consider will differ by production system, environmental factors (such as soil type, rainfall, and geography), as well as the commercial viability of existing and emerging technologies or practice. Hence, the collective efforts of producers across Australia will contribute to achieving the red meat industry's [Carbon Neutral](#) by 2030 target.



Aligns with UN Sustainable Development Goals¹⁰
SDG12: Responsible consumption and production

Systematic review of epidemiological evidence on red meat and chronic disease risk and dietary interventions on management of weight, blood pressure, lipids, and glucose to identify opportunities to reduce impact of overconsumption on chronic disease risk.

Findings suggest recommending red meat consumption in balanced meals three to four times a week (equivalent to recommended amounts for a nutritionally adequate diet and a healthy weight), provides an opportunity to increase vegetable consumption.

- Overweight and obesity and lack of vegetables, wholegrains and legumes in the Australian diet are key risk factors for chronic disease^{5,11}.
- Within the context of the Australian diet, red meat consumption is mostly unprocessed meat and not a major source of energy, saturated fat or sodium⁷. Several studies report a positive association between lean red meat and vegetable intake¹²⁻¹⁴.
- Associations reported for red meat consumption and chronic disease risk are inconsistent with no dose response available to guide recommendations³⁰⁻³².
- There is no evidence of chronic disease risk when lean red meat is eaten in recommended amounts and as part of a healthy diet³²⁻³⁶.



Aligns with:

- **National Preventive Health Strategy 2021–2030**³
Key focus area: Improving access to and the consumption of a healthy diet.
- **National Obesity Strategy 2022–2032**⁴
Strategy 2.1: Improve people's knowledge, skills and confidence to lead active lives and to buy, prepare and enjoy healthy food and drinks.
- **UN Sustainable Development Goals**¹⁰
SDG3: Good health and well-being.

The 2013 Australian Dietary Guidelines are currently under review. Irrespective of the amounts of red meat recommended, the findings outlined in this report highlight the importance of food knowledge and skills for understanding and providing guidance on eating recommended amounts of red meat in a sustainable diet. Food knowledge and skills are particularly important for understanding the role red meat plays in the diet, including amounts and type of red meat consumed and the impact of agricultural practices on the environment.

References

1. FAO and WHO (2019) Sustainable healthy diets - Guiding principles. Rome.
2. Pollinate Research Agency (2022). *Sustainable Diet Strategies*. Qualitative and quantitative research commissioned by Meat and Livestock Australia, Sydney (unpublished).
3. Australian Government Department of Health (2021). *National Preventive Health Strategy 2021-2030*. Canberra ACT: Commonwealth of Australia. Available from: health.gov.au
4. Commonwealth of Australia (2022). *The National Obesity Strategy 2022-2032*. Health Ministers Meeting. Available from: health.gov.au
5. National Health and Medical Research Council (2013). *Australian Dietary Guidelines*. Canberra (ACT): NHMRC. Available from: nhmrc.gov.au/adg
6. Sui Z, Raubenheimer D, Cunningham J and Rangan A. (2016) Changes in meat/poultry/fish consumption in Australia: From 1995 to 2011–2012. *Nutrients* 8:753.
7. Sui Z, Raubenheimer D and Rangan A. (2017A) Consumption patterns of meat, poultry, and fish after disaggregation of mixed dishes: secondary analysis of the Australian National Nutrition and Physical Activity Survey 2011–12. *BMC Nutr* 3:52.
8. National Health and Medical Research Council (2011). *A modelling system to inform the revision of the Australian Guide to Healthy Eating*. Canberra (ACT): Commonwealth of Australia.
9. Ridoutt B, Baird D and Hendrie G. (2021A) Diets within environmental limits: The climate impact of current and recommended Australian diets. *Nutrients* 13(4):1122.
10. United Nations (2022). *The Sustainable Development Goals Report 2022*. New York (USA): United Nations Publications. Available from: UN.org
11. Australian Bureau of Statistics (2014). *Australian Health Survey: Nutrition First Results - Food and Nutrients, 2011-12*. Canberra ACT: ABS. Available from: abs.gov.au
12. Jenkins L, McEvoy M, Patterson A and Sibbritt D. (2012) Higher unprocessed red meat, chicken and fish intake is associated with a higher vegetable intake in mid-age non-vegetarian women. *Nutr & Diet* 69:293-299.
13. Grieger JA, Scott J and Cobiac L. (2012) Cluster analysis and food group consumption in a national sample of Australian girls. *J Hum Nutr Diet* 25:75-86.
14. Sui Z, Raubenheimer D and Rangan A (2017B) Exploratory analysis of meal composition in Australia: Meat and accompanying foods. *Public Health Nutr* 20:2157-2165.
15. Ridoutt B, Baird D and Hendrie G. (2021B) Diets within planetary boundaries: What is the potential of dietary change alone? *Sustain Prod Consum*. 28:802-810.
16. Meat and Livestock Australia (2020). *MLA Healthy Meals Report*. Sydney (NSW): MLA. Available at: MLA Healthy Meals
17. Droulez V and Cunningham J. (2022) *Review of the nutrient composition of Australian red meat*. Sydney (NSW): MLA. Available from: mlahealthymeals.com.au
18. Food Innovation Australia (2021). *The National Food Waste Strategy Feasibility Study – Final Report*. Available from: fial.com.au
19. Ahmed F, Coyne T, Dobson A and McClintock C. (2008) Iron status among Australian adults: findings of a population-based study in Queensland, Australia. *Asia Pac J Clin Nutr*. 17:40-7.
20. Atkins L, McNaughton S, Campbell K and Szymlek-Gay E. (2016) Iron intake of Australian infants and toddlers: findings from the Melbourne Infant Feeding, Activity and Nutrition Trial (InFANT) Program. *Br J Nutr*. 115(2):285-93.
21. Zhou S, Gibson RA, Gibson RS and Makrides M. (2012) Nutrient intakes and status of preschool children in Adelaide, South Australia. *Med J Aust*. 196:696-700.
22. Heath A, Skeaff C, O'Brien S, Williams S and Gibson R. (2001) Can dietary treatment of non-anemic iron deficiency improve iron status? *J Am Coll Nutr* 20(5): 477-484.
23. Patterson A, Brown W, Roberts D and Seldon M. (2001) Dietary treatment of iron deficiency in women of childbearing age. *Am J Clin Nutr* 74(5):650-56.
24. Cheng H, Griffin H, Byrant C, Rooney K, Steinbeck K and O'Connor H. (2013) Impact of diet and weight loss on iron and zinc status in overweight and obese young women. *Asia Pac J Nutr* 22(4):574-82.
25. Fayet F, Flood V, Petocz P and Samman S. (2014) Avoidance of meat and poultry decreases intakes of omega-3 fatty acids, vitamin B12, selenium and zinc in young women. *J Hum Nutr Diet* 27:135-142.
26. National Health and Medical Research Council, Australian Government Department of Health and Ageing, New Zealand Ministry of Health (2006). *Nutrient Reference Values for Australia and New Zealand*. Canberra: National Health and Medical Research Council.
27. Hendrie G, Baird D, Ridoutt B, Hadjikakou M and Noakes M. (2016) Overconsumption of energy and excessive discretionary food intake inflates dietary greenhouse gas emissions in Australia. *Nutrients* 8(11):690.
28. Ridoutt B, Baird D, Anastasiou K and Hendrie G. (2019) Diet quality and water scarcity: Evidence from a large Australian population health survey. *Nutrients* 11(8):1846.
29. Ridoutt B, Anastasiou K, Baird D, Garcia JN and Hendrie G. (2020) Cropland footprints of Australian dietary choices. *Nutrients* 12(5):1212.
30. Alexander D, Weed D, Miller P and Mohamed M. (2015) Red meat and colorectal cancer: a quantitative update on the state of the epidemiologic science. *J Am Coll Nutr*. 34(6):521-543.
31. Johnston B, Zeraatkar D, Han M, Vernooij R, Valli C, El Dib R, Marshall C, Stover P, Fairweather-Taitt S, Wójcik G, Bhatia F, de Souza R, Brotons C, Meerpohl J, Patel C, Djulbegovic B, Alonso Coello P, Bala M and Guyatt G. (2019) Unprocessed red meat and processed meat consumption: Dietary Guideline Recommendations from The Nutritional Recommendations (NutriRECS) Consortium. *Ann Intern Med*. 171(10):756.
32. Lescinsky H, Afshin A, Ashbaugh C, Bisignano C, Brauer M, Ferrara G, Hay S, Iannucci V, Marczak L, McLaughlin S, Mullany E, Parent M, Serfes A, Sorensen R, Aravkin A, Zheng P and Murray C. (2022) Health effects associated with consumption of red meat: a Burden of Proof study. *Nature Medicine* 28:2075-82.
33. Noakes M, Keogh J, Foster P and Clifton P. (2005) Effect of an energy-restricted, high-protein, low-fat diet relative to conventional high-carbohydrate, low-fat diet on weight loss, body composition, nutritional status, and markers of cardiovascular health in obese women. *Am J Clin Nutr* 81(6):1298-1306.
34. Clifton P, Keogh J and Noakes M. (2008) Long-term effects of a high-protein weight-loss diet. *Am J Clin Nutr* 87(1):23-29.
35. Nowson C, Wattanapenpaiboon N and Pachett A. (2009) Low-sodium Dietary Approaches to Stop Hypertension-type diet including lean red meat lowers blood pressure in postmenopausal women. *Nutr Res* 29(1):8-18.
36. Larsen R, Mann N, Maclean E and Shaw J. (2011) The effect of high-protein, low-carbohydrate diets in the treatment of type 2 diabetes: a 12-month randomised controlled trial. *Diabetologia* 54(4):731- 740.

For further information, visit:
mlahealthymeals.com.au



Meat & Livestock Australia Limited
ABN 39 081 678 364

Level 1, 40 Mount Street
North Sydney NSW 2060

Phone: 02 9463 9333
Fax: 02 9463 9393
Website: www.mla.com.au

Published: July 2023