

Submission to the House of Representatives on Health, Aged Care and Sport on the Inquiry into Diabetes in Australia

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Executive Summary

- This submission addresses term of reference 4, with a specific focus on the early childhood period (conception to age 5 years) as a key opportunity for early prevention of obesity and diabetes.
- Obesity is a significant risk factor for the development of Type 2 diabetes, with rates of obesity and diabetes in childhood and adolescence increasing in tandem.
- Early childhood is an opportune time to intervene to prevent the development of obesity by establishing health-promoting behaviours from early life.
- The NHMRC Centre for Research Excellence in Translating Early Prevention of Obesity in Childhood (CRE EPOCH-Translate) has developed a suite of effective early childhood obesity prevention interventions that are effective when delivered in a variety of formats and contexts.
- CRE EPOCH-Translate has conducted world-leading research which has led to the development of tools that can be used to identify the most effective components of obesity prevention interventions and their cost-effectiveness.

Key Recommendations

- 1. Establishing health behaviours in early childhood should be explicitly stated in the Federal Government wellbeing framework and supported with appropriate investment.
- 2. Invest in research, implementation, scale-up and evaluation of obesity prevention strategies with demonstrated efficacy.
- 3. Establish coordinated, centralised leadership structures to address the social, commercial, and environmental determinants of health.

About CRE EPOCH-Translate

The NHMRC Centre for Research Excellence in Translating Early Prevention of Obesity in Childhood (<u>CRE EPOCH-Translate</u>) brings together leading researchers, practitioners and policymakers in Australia and New Zealand. The purpose of this world-leading collaboration is to identify and translate effective, cost-effective, and scalable approaches to promote health and healthy behaviours and prevent obesity in children aged 0-5 years.

Our vision is to enable Australian children to start their lives with the best health and lower their risks of future chronic diseases. In its first tranche of funding (2016-2021), our research has resulted in a strong evidence base for interventions to support parents in promoting healthy behaviours to their children from very early in life. Read <u>our evidence briefs here</u>. In the second tranche of funding (2022-2026), we focus on translating evidence-based approaches and building the workforce capacity to deliver equitable health to all Australian children.

Introduction and Scope

CRE EPOCH-Translate welcomes the opportunity to contribute to the Inquiry into Diabetes in Australia, which poses a major burden to Australian lives and society.

This submission addresses term of reference 4, focusing on the interrelationship between diabetes and obesity in Australia, the causes of obesity and the evidence base in the prevention of obesity. Specifically, we focus on the early childhood period (conception to age 5 years) as a key opportunity for early prevention of obesity and diabetes.

Obesity is a strong risk factor for diabetes

The prevalence of obesity and type 2 diabetes have increased in tandem, and figures estimate that as many as 90% of cases of type 2 diabetes are influenced by obesity, making the prevention of obesity essential to efforts to prevent diabetes in later life (1). Children and adolescents with obesity are at increased risk of developing type 2 diabetes, with 26-50% of children and adolescents with overweight or obesity estimated to have metabolic syndrome, which often includes early risk factors for type 2 diabetes (2, 3).

We take a <u>broad socio-ecological</u> view of the determinants of obesity, recognising that the rise in obesity prevalence has been driven by an obesogenic environment, which has increased our biological, social and economic vulnerability to obesity (2, 4). As such, a multisectoral approach is needed to prevent obesity and related non-communicable diseases (NCDs), including type 2 diabetes. Determinants of obesity at all levels must be addressed, including individual, interpersonal, institutional, community and policy levels (these levels are illustrated in the image below). This needs to involve approaches targeting children and their families, primary care, communities, and health systems. Targeting individuals alone can only be part of the solution (3).

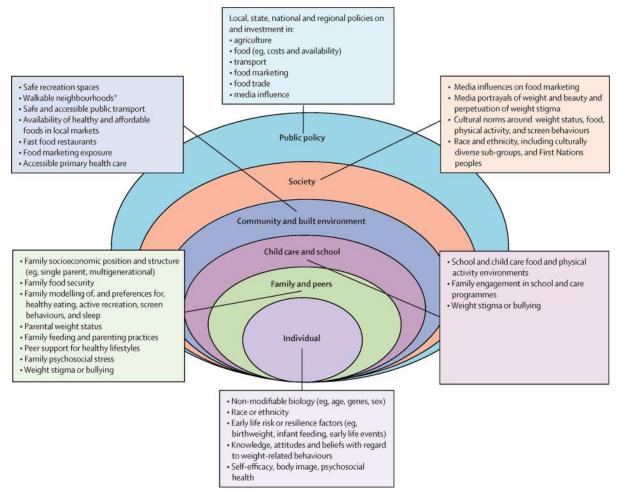


Image from: *Obesity in children and adolescents: epidemiology, causes, assessment, and management.* Jebeile et al. The Lancet Diabetes & Endocrinology, Volume 10, Issue 5, 351 - 365

We also take a <u>life-course approach</u> to the prevention and management of obesity. While this submission focusses on the prevention of obesity in the first 2,000 days (i.e., from conception to five

years of age - term of reference 4), we recognise that effective prevention of NCDs, like obesity and diabetes, must consider the needs of individuals across all ages and stages of life, with interventions required at both the individual and population level. As obesity and diabetes are both chronic diseases, it necessitates that prevention and management efforts must also be sustained throughout life (5).

Recommendation 1: Establishing health behaviours in early childhood should be explicitly stated in the Federal Government wellbeing framework and supported with appropriate investment

Why focus on obesity prevention in early life?

Globally, over 38 million children under the age of five are affected by overweight and obesity (6). In Australia, we have seen rising rates of childhood overweight and obesity in the last four decades. While overall rates of obesity have begun to plateau in Australia, we have continued to see increases in the number of children affected by severe obesity (7).

As rates of obesity in young people have increased, so too has the proportion of youth diagnosed with type 2 diabetes (8, 9). Increases in diabetes in youth have been attributed, in large part, to increases in the prevalence of obesity in children and increased exposure to diabetes in utero, for children born to mothers with diabetes (10). Type 2 diabetes that develops in adolescence is a particularly severe presentation of the disease, accompanied by increased rates of diabetes-related complications, including microvascular and cardiovascular effects (11).

Children's weight status tends to track from early childhood into adolescence (12) and from adolescence into adulthood (13). Among Australian children, healthy weight is very stable between early childhood and adolescence (age 3-17 years). In contrast, tracking of overweight and obesity is much weaker among children under 7 years than over 7 years, highlighting the importance of a window of opportunity to establish healthy weight in early childhood (12).

Both obesity and diabetes disproportionately affect young people from culturally diverse backgrounds and socially disadvantaged backgrounds (12, 14). The persistence of obesity throughout childhood is more marked in these groups and, in Australia, First Nations young people are some of those most affected by youth-onset diabetes (11, 15). Thus, preventive efforts are important to improve health equity.

There is the greatest capacity to change behaviour and biology in early life, making it an opportune time to intervene and have sustained impacts on lifelong risks of obesity and diabetes for the individual and future generations (16). Modifiable risk factors for obesity emerge and lifestyle patterns develop in early life and persist over time (17). Such risk factors include parental factors (e.g., rapid gestational weight gain), dietary factors (e.g., early introduction of solids), behavioural factors (e.g., lack of active play and increased screen time), and environmental factors (18-20).

Broader impacts of obesity on Australia's health system and economy

The cost of overweight and obesity to the Australian community is high, estimated at \$11.8 billion in 2018; and may cost an estimated \$87.7 billion by 2032 (21). There is evidence that Australian children with obesity have higher healthcare costs than those with a healthy weight (22-25). In the first study of its type, we found that the direct healthcare costs of children with obesity aged 2–4 years were 60%

higher than those of healthy weight children. We estimated the annual direct costs to the Australian healthcare system of early childhood obesity are high, at around \$17 million (24).

The health benefits and healthcare cost savings of early childhood obesity prevention that accrue within the child-to-adolescent timeframe are significant at the population level. We have demonstrated the cost-effectiveness of two early childhood obesity prevention interventions (*Prevention of Overweight in Infancy (POI-Sleep)* and *Romp & Chomp*) (26, 27). The lifetime healthcare cost savings and health benefits of early childhood obesity prevention intervention could be substantial if the intervention effect is sustained (28).

Overweight and obesity also has a negative impact on quality of life during childhood and adolescence (29). Notably, we found that the quality of life of children in a healthy weight range declines only slightly with age, but among children with overweight and obesity, quality of life declines steeply with age.

Given the persistence of obesity from early life, establishing, and sustaining healthy lifestyle behaviours from early childhood could reduce health inequities, improve quality of life, and reduce healthcare spending. Moreover, it could reduce the burden of preventable chronic diseases generally presenting later in life, including type 2 diabetes, heart disease, stroke, and some forms of cancer (28).

Supporting recommendations:

- 1. Health is a core component of the Government's first wellbeing framework, 'Measuring What Matters'. Within this, it is essential that investments and policies aimed at establishing good health and health behaviours from early life are included as the first step to ensure children's good health and wellbeing.
- 2. Government investment in multi-sectoral solutions that are co-designed and tailored to meet the needs of children and families from diverse cultural, ethnic and linguistic backgrounds and that support connections between family, friends and community are urgently needed. This should include sustainable federal government funding of <u>community-led</u> early years parenting support programs with a focus on nutrition support in pregnancy and early childhood for First Nations families (30).

Recommendation 2: Invest in research, implementation, scale-up and evaluation of obesity prevention strategies with demonstrated efficacy

Innovative interventions to prevent obesity in early life

CRE EPOCH-Translate has undertaken the first trials globally of early childhood obesity prevention interventions in children aged 0-2 years. An innovative study combining the data from four early intervention trials (2,196 mother-child dyads) found significant improvements in child BMI z-score at age two years (31). We have demonstrated that parental engagement is high at this time and parents value the support provided, making this an optimal time to encourage health behaviour change (32).

These interventions in early life established healthier behaviours (longer breastfeeding, enhanced knowledge of when to introduce solid foods, improved practice of "tummy time", reduced screen time, higher fruit and vegetables intake, lower sweet snacks and drinks) and improvements in maternal diet and child feeding practices (33, 34). Such changes may offer health benefits beyond

the prevention of overweight, obesity, and associated NCDs (including diabetes) in later childhood and beyond.

These effective interventions have been adapted for delivery in a variety of formats, including via telephone and SMS, with positive impacts on children's BMI, infant feeding, screen time, "tummy time", and dietary and activity habits across the first three years of life (35-37). We have shown that different modes of delivery (e.g., groups, individual consults, SMS, phone coaching, apps) in different settings (e.g., home-based, clinic-based) appeal to different parents/carers of young children and circumstances (38, 39).

We have demonstrated that early childhood health promotion interventions are particularly effective for improving health behaviours among less educated and younger mothers (40) and those from lower-income households (37). We have also engaged culturally and linguistically diverse families and culturally adapted intervention programs for Chinese and Arabic-speaking mothers, with demonstrated feasibility and acceptability (41).

In the scale-up of two early intervention programs in New South Wales (the *Healthy Beginnings* program) and Victoria (the *INFANT* program), we have established extensive partnerships with local governments, health services, community, and research organisations. This has given us the capacity to scale up interventions at the state and national levels, including the development of parent resources, web-based education, and professional development material for health professionals.

Tools for effective implementation and evaluation of obesity prevention interventions

The CRE EPOCH-Translate has developed innovative models, techniques and tools that can be used to guide the implementation and scale-up of obesity prevention interventions and to evaluate the effectiveness of these interventions at scale.

We have brought together the largest global alliance of early childhood obesity prevention interventions (<u>TOPCHILD Collaboration</u>) to date. Using innovative knowledge synthesis methodologies that we developed to analyse trials globally, we have a unique opportunity to evaluate why and how interventions work and for whom (42-44). This understanding will provide evidence-based guidance on how interventions might be adapted or tailored when translated into routine practice.

We have developed the first health economic model to predict body mass index (BMI) trajectories, quality of life and healthcare cost savings of early childhood obesity interventions. The model can be used by policymakers to identify future impacts of early childhood interventions during childhood and adolescence, the most cost-effective approaches for intervening in this age group, and which population groups will benefit most from interventions (45).

Beyond the tools required to identify the most effective interventions to implement, we have developed a suite of <u>quick and robust tools</u> to measure diet, physical activity, screen time and sleep in children under five years. The tools are feasible for use in policy and practice settings, to ensure that the impact of implementation can be quantified and used to inform ongoing implementation and scale-up efforts.

Supporting recommendations:

3. Specific investment in obesity and diabetes prevention from the Medical Research Future Fund (MRFF) and National Health and Medical Research Council (NHMRC) is needed to

enable translational research and facilitate implementation at scale of evidence-based obesity prevention interventions across early childhood sectors.

4. Government scale-up of interventions should make use of innovative tools, such as those mentioned in this submission, to inform implementation and evaluation of the programs, including incorporating evidence on cost-effectiveness derived from economic modelling tools into the policy decision-making process, to ensure the most efficient use of scarce resources.

Recommendation 3: Establish coordinated, centralised leadership structures to address the social, commercial, and environmental determinants of health

Australian Federal Government policies and actions to prevent obesity in early childhood

Compared to similar countries (including Canada, England, Scotland, the Republic of Ireland and New Zealand), Australia has limited policy infrastructure to connect policies across government for early childhood obesity prevention at the federal level (46).

We urgently need actions to address the social, commercial, and environmental determinants of health. Solutions need to go beyond health and consider multiple systems. Our work with parents of young children showed strong support for broad policies to address childhood obesity (47), including:

- Restricting unhealthy food advertising in and around public transport
- Building a network of connected walkways and bike paths
- Requiring childcare services to have supportive policies around nutrition, play, screen time and sleep
- Routine height and weight measurements at health visits
- Programs for families to support healthy eating and active living

The recent <u>National Preventive Health Strategy (2021-30)</u> and the <u>National Obesity Strategy (2022-32)</u> responded to calls for a national approach to obesity prevention and actions on the wider determinants of health. These are encouraging first steps. However, we are yet to see a clear implementation and evaluation plan with sufficient funding to ensure these targets are being met (48).

Supporting recommendations:

- 5. An independent national preventive health agency with bipartisan support, responsible for overseeing the implementation of the National Preventative Health Strategy and National Obesity Strategy, is needed to develop long-term strategies to address the social, commercial, and environmental determinants of health. This agency could provide the crucial coordinated centralised leadership that is absent in Australia.
- 6. The proposed Australian Centre for Disease Control, from the outset, should include chronic disease prevention as a core component of its remit.

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