

## Overview

# Overview: Bellagio Conference on Program and Policy Options for Preventing Obesity in the Low- and Middle-Income Countries

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## Summary

The Bellagio ‘Conference on Program and Policy Options for Preventing Obesity in the Low- and Middle-Income Countries’ (LMICs) was organized to pull together the current. We need not reiterate the importance of this topic or the speed of change in eating, drinking and moving facing us across the globe. The conference emerges from need to significantly step up the policies and programs to reduce obesity by learning from some current examples of best practice and strengthening the role of the academic and civil society players in translating global evidence and experience into action at the national level. There is also a need to empower the younger generation of scholars and activists in these countries to carry on this effort. The meeting was also timely because a number of funding agencies in the United States, Canada and the UK, at least, are beginning to focus attention on this topic. This set of papers provides not only examples of existing best practice but also a road map ahead for LMICs in the various areas of action needed to reduce obesity across LMICs. The meeting highlighted critical barriers to implementation that have blocked many initiatives.

**Keywords:** Food policy, lower income countries, obesity prevention.

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## Introduction

The Bellagio Conference discussed the experiences in controlling obesity in countries across the globe with a primary focus on low- and middle-income countries (LMICs). The underlying goal was to understand the problems in developing large-scale preventive policies and regulations to address the large increases in global obesity and related non-communicable diseases (NCDs). Country leaders from academia and government who are at the forefront of public health actions on obesity came together with representatives from World Health Organization (WHO) and several bilateral and multilateral agencies and foundations working on this topic or deeply involved in related activities.

The conference began with a brief overview that examined the continued rapid global changes in eating, drinking, and physical activity/inactivity patterns and the resulting rapid increase in obesity and related diseases. It also presented some of the complexities of monitoring the modern global food system. Then two examples of more coordinated efforts – one central government driven from the UK and one more based on state and local efforts from Australia and New Zealand – were presented. After that, the focus shifted to LMICs. These included countries that have identified obesity prevention as a major concern and are actively attempting to address this issue, other countries that have yet to recognize obesity as a top priority but have major needs, and two countries with the very complex double burden of large-scale undernutrition

and rapidly growing obesity. What emerged from the discussions was a surprising uniformity in the major efforts of the big transnational food and beverage sectors ('Big Food', including large processed food and beverage manufacturers, fast food chains and related marketing companies) to undermine and defeat many important public policies to prevent obesity. There were also common efforts from civil society in many countries in their attempt to offset the power of Big Food's influence on public policy (1). We highlight key aspects of this week-long meeting in this paper. We also end with a review of the research gaps at the country and global levels as they relate to LMICs.

### The nature of the problem

Barry Popkin and Meghan Slining highlight three important dimensions of the current obesity situation across the LMICs (2). First, across virtually all low- and middle-income regions the prevalence of overweight and obesity is approaching levels found in higher income countries. This is particularly true in the Middle East, North Africa, in Latin America and the Caribbean. Using nationally representative samples of women aged 19–49 ( $n = 815,609$ ), he summarizes the annualized rate of increase of the prevalence of overweight from the first survey conducted in each country closest to 1990 to the last survey closest to 2010. Overweight increases ranged from 0.31% points per year to 0.92% points per year for Latin America and the Caribbean and for the Middle East and North Africa, respectively. He also shows that in virtually all regions and in most countries underweight among these same women is declining rapidly (although note he did not focus on pre-schoolers, the major group facing malnutrition globally).

Second, Popkin highlights the shifting body mass index (BMI), which is moving to the right, i.e. to heavier individuals. For a subsample of countries, he shows how mean BMI at the 95th percentile has increased significantly across all regions, representing predicted weight increases of 5–10 kg over this 10- to 20-year period, a very large cohort shift. His third major point is the marked waist circumference increases in selected LMICs of 2–4 cm at the same BMI (e.g. 25) over an 18-year period. In sum, this paper indicates a growing potential for increased cardiometabolic problems linked with a large rightward shift in the BMI distribution and increased waist circumference at each BMI level.

At the same time, Popkin's presentation (see the website for all presentations: <http://www.bellagioobesity2013.org>) brings attention to very rapid declines in occupational, home production (cleaning, food preparation, child care, etc.) and transportation-related components of physical activity in selected countries representative of the declines

seen in Asia and Africa and at a slightly slower rate in Latin America. However, in all regions the activity decline in LMICs occurred after the longer term decline in the higher income regions of the world.

This rapid decline in physical activity has been accompanied by an equally rapid shift in the food systems in all LMICs except a very few isolated, poorer countries. Monteiro *et al.* focus on our food system (3). They discuss this marked increase in access to a modern food supply based on ready-to-consume ultra-processed products made up from industrial formulations of oils and fats, starches and sugars, and preservatives and cosmetic additives (4). They also note that these products are quickly replacing minimally processed foods, including grains, legumes, pulses, and fruits and vegetables, and processed culinary ingredients, such as vegetable oils and flours. The result is an increase in the overall intake of added sugars, fats, and sodium, a decrease in proteins and fibre, and an excessive energy density.

### Monitoring of the modern Big Food and Big Beverage sectors

Ng and Dunford highlight the large growth not only of these modern food systems, as discussed by Monteiro *et al.*, but also of modern away-from-home food systems (5). In LMICs, the proportion of diets coming from manufactured food sources and food not prepared at home has accelerated greatly in the last decade. Ng and Dunford discuss the complexity of the modern food supply and the challenges we face in monitoring and evaluating the impact of this ever-changing food system and the set of foods and dishes. In particular, we do not have good measurements of the nutritional composition of food products and what it means for population health. Reformulations are continuous, as are the introduction of new packaged foods and food services and the removal of older ones. Their paper introduces a system under development that will help scholars monitor and evaluate the changes made in each key sector of the modern food supply. To date, no food composition table in LMICs or in higher income countries has been able to keep up with the rapid growth, reformulations and new product introductions across the globe (6,7).

### High-income country examples

Jebb, Aveyard and Hawkes review the history of the UK attempts to tackle obesity (8). Their paper focuses on a very special period, beginning with a Foresight Programme report on obesity, when the UK created a coordinated, large-scale, centrally driven effort to change the food environment across all sectors of society. Tackling obesity has been a policy priority in England for more

than 20 years. Two formal government strategies on obesity in 2008 (Healthy Weight, Healthy Lives) and 2011 (Call to Action on Obesity) drew together a range of actions and developed new policy initiatives to fill perceived gaps. Today, a wide range of policies is in place, including support for breastfeeding and healthy weaning practices; nutritional standards in schools; restrictions on marketing foods high in fat, sugar and salt to children; and schemes to boost participation in sports, active travel plans and weight management services. Data from annual surveys show that the rate of increase in childhood obesity has attenuated in recent years but has not yet been reversed. This paper considers the actions, what is known about the impacts of individual policies and the overarching strategy to tackle obesity in the UK.

The UK government has shifted to a more conservative, social responsibility initiative that empowers local communities to address their problems of obesity, including corporate voluntary efforts. A recent major government driver initiative with civil society support has convinced companies, representing approximately 65% of the total food sales packaged food sector, to participate in a traffic light interpretive labelling system to identify the nutritional content of foods in terms of selected nutrients of concern such as salt and saturated fat. This program emphasizes the potential importance of public, civil society and private organizations when focused on public health-oriented goals defined by government.

While the UK effort is instructive for its far-ranging scope, the paper highlights the lack of clear evidence of the efficacy of many components and the complications of evaluating separate components of a complex comprehensive program.

The Australian example began as a series of whole-of-community, government-funded interventions in one state, Victoria (9). They focused on building community capacity along with specific interventions in pre-schools, primary schools and secondary schools, all of which proved to be effective in reducing unhealthy weight gain in the intervention children. These findings have contributed to the step-up to a systems-based intervention across Victoria where local governments and communities have been empowered and funded tackle obesity at the local level. South Australia is taking a similar approach of working through local government to reduce childhood obesity. In contrast to the UK, Australia has not successfully achieved any national regulatory policies. The local efforts are each based on rigorous evaluations of the small efforts; similar evaluations of program cost-effectiveness and overall impact will need to continue on a broader scale. A final strength of the Victorian effort has been the funding of several advocacy groups through the Victorian Health Promotion Foundation (VicHealth), which was originally

established using funding from tobacco taxes (<http://www.vichealth.vic.gov.au>).

### **Low- and middle-income countries: stages of recognition and activity vary**

The nine LMIC presentations reveal three stages of change. Five countries – Brazil, Chile, Mexico, Singapore and Thailand – have not only recognized obesity as a major problem but have initiated large-scale efforts to address it. In four of them, major food companies have erected barriers to policy attempts to address obesity. China, in contrast, has recognized obesity as a major problem but has not begun significant, large-scale regulatory or other efforts to address the issue. In two countries – India and Bangladesh – undernutrition is a much greater cause of malnutrition, but obesity and related NCDs are rapidly becoming public health concerns.

Among the five countries mentioned above, Mexico has had the highest level of obesity and comorbidities and in the last 10 years has launched a series of aggressive initiatives (10). They range from a beverage guidance panel to delineate national policies to counter the high level of consumption of calorically sweetened beverages to an integrated government obesity prevention plan signed by the president and all the cabinet members that allows only healthy foods and beverages in schools and that formulates a front of the package (FOP) food labelling system to identify healthy choices. Barquera, Campos and Rivera describe each initiative and the major barriers that Big Food has set up in opposition to implementation. Mexico has the advantage of having data from repeated national surveys on diet and body composition, but it has collected minimal data on physical activity. Moreover, it has no system to monitor the modern food supply. However, with the support of the International Development Research Center, it will evaluate the FOP food labelling system and the school lunch program changes as they are put in place. It is one of the few Latin American countries whose culture strongly supports rigorous evaluation of its initiatives. In a new stage, a coalition of civil organizations funded by Bloomberg Philanthropies and lobbyists and scholars from the National Institute of Public Health has attempted to address obesity. There is hope that these organizations can apply voter and mass media pressure on the conservative government to carry out several of the national regulatory initiatives.

Brazil has implemented some exemplary programs since the publication of the National Food and Nutrition Policy in 1999 (11). The initiatives include development of a comprehensive national inter-sectoral plan for obesity prevention and control with a view towards confronting its social and environmental causes and a highly innovative program to provide a significant proportion (30%) of

food provided in schools from local farmers. Other major initiatives were described in a paper from an earlier Bellagio meeting (12). More recent activities led to a law to restrict the marketing of unhealthy foods and beverages to children. However, under the pressure of Big Food legal actions, the attorney general struck down the law. While in selected situations the Brazilian government has instituted strong evaluations of its national welfare initiatives, in the case of all obesity-related initiatives at the school level no significant national evaluation system was established. The lack of evaluation research is a major gap, as Brazil has conducted several national obesity surveys and its first national dietary intake survey.

Chile has faced major obesity problems for several decades (13). One of the first major national initiatives was the Law of Food Labeling and Advertising, approved in July 2012. This law was intended to incorporate easy-to-understand FOP labelling with specific messages concerning critical nutrients and also to decrease children's exposure to unhealthy foods by restricting marketing, advertising and sales. Uniquely, in contrast to the Asian and Mexican positive logos used to promote healthy choices, the Chilean law proposes to identify the least healthy food products, including excessive sugar, sodium and saturated fat, placing a highly visible negative box on each package. As was the case in Mexico, this action in Chile was the result of a concerted effort led by senior scholars from the Instituto de Nutricion y Tecnologia de los Alimentos and others in the public health community, who brought in eminent international public health leaders to work with the Chilean Senate. Chile is finalizing guidelines for this law. During the public hearings, the Big Food lobby has applied political pressures that appear to have stymied implementation of the law.

Singapore has faced major increases in obesity and has initiated many school, workplace and hawker regulations (14). Nevertheless, overweight and obesity have continued to rise across all ages. The government has been one of the most active in the world in attempting to create programs, under the leadership of the Health Promotion Board, to increase water, fruit and vegetable intake; increase physical activity; and reduce sodium and saturated fat intake. The Choices FOP label identifying healthy foods has been used on a voluntary basis. Singapore officials are considering broader and more aggressive public education efforts.

Thailand is the other LMIC in Asia that has just begun to aggressively address obesity, and its efforts began much earlier than most (15). Most interestingly, Thailand previously initiated some of the most effective public health campaigns to reduce smoking, prevent human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS), promote family planning and address undernutrition. In all these areas, the country has been

recognized as a global leader among lower income countries. Now, overweight and obesity and related NCDs have become its major public health problem. The country has initiated one program to ban unhealthy beverages from schools; however, Big Food's financially remunerative contracts with schools that promote sales of sugary beverages and other unhealthy junk foods have slowed the program's impact. Authorities are considering more aggressive efforts, such as an FOP healthy food labelling system. Nevertheless, they have yet to show the same large-scale regulatory efforts to curb obesity that they did when facing earlier public health problems.

China is unique (16). Among LMICs, it has one of the most sophisticated surveys monitoring diet, activity and obesity. This research has shown major declines in undernutrition and very rapid shifts towards increasingly higher levels of overweight and obesity and increased waist circumferences. Since becoming the People's Republic of China, the country has adopted wide-scale family planning and social and economic initiatives. Unlike earlier public health campaigns in the post-World War II era, it has not aggressively addressed obesity prevention through environmental changes. Nevertheless, Wang and Zhai document a number of education programs and guidelines.

India's challenge is particularly complex (17). In rural areas in particular, but also to a lesser extent in urban slums and squatter areas, undernutrition is a major issue. In terms of acute undernutrition, over half of the world's malnourished children and adults live in India. At the same time, excessive visceral fat, even at low BMI levels, has led to a major increase in diabetes. The prevalence of overweight is increasing rapidly in urban areas, and India expects to soon have the largest population of people with diabetes in the world. Rather than making coordinated efforts to address both issues in this dual burden, the government has neglected overweight prevention and promotion of a healthier food supply and physical activity. The attempts of civil organizations have not been effective, and the only large-scale approaches have come from public litigation led by one foundation. Currently, the only major attempt to address the issues at the national level is consideration of a ban on the sale of junk food in schools.

Bangladesh is in an even earlier stage of facing the dual burden of undernutrition and obesity and related NCDs (18). At this point, the country has made only a few small-scale efforts to study and address obesity, and these have come from non-governmental organizations rather than the government.

### **The Western Pacific Islands: trade and taxation policies**

This set of countries has the highest rates of obesity and related NCDs in the world, in part due to substantial

dietary changes (19). Yet, these countries have been innovative in developing trade-related policy approaches to create a less obesogenic food environment. They imposed import and excise tariffs on sugared beverages and other high-sugar products, monosodium glutamate and palm oil, and lowered tariffs on fruits and vegetables. They also attempted to ban importation of very high-fat foods. The World Trade Organization efforts to stop these bans highlight the politics, trade agreements and donor influences that affect available options. These countries have led the way in cooperation between the health sector and the trade sector to effectively address unhealthy food policies. However, given their minimal resources, they have undertaken little in the way of dietary research on the impact of the programs.

### **Economic incentives: the South African private program Vitality**

South Africa has very high levels of overweight, obesity and obesity-related NCDs, whereas prevention of HIV/AIDS has dominated public sector activities, and the government has focused minimally on obesity prevention. However, a large private insurance company, Discovery Health, has developed a particularly innovative initiative. Lambert and Kolbe-Alexander focus on this private sector program, Vitality, which promotes a values-based benefits design to encourage positive lifestyle choices (20). The Vitality program uses private incentives to promote an array of wellness activities, including health risk assessments, subsidized gym memberships, health checks (BMI, cholesterol, glucose and blood pressure), and smoking cessation and weight loss programs. It also provides substantial discounts on a range of store purchases of healthy foods, the first such program to offer this incentive. The carrot-and-stick approach may have implications for public health policies even in lower and middle-income settings and underserved communities. Further, the paper discusses a unique monitoring system that allows extensive and thorough evaluation of this program. This paper shows the private sector's potential to contribute. Nevertheless, the financial viability of a system that provides subsidies for healthy food selection requires more research.

### **The major impediment to prevention: Big Food and Big Beverage sectors**

The conference culminated with a panel led by donors and a talk on scaling up efforts by Swinburn. Portions are available on the website as short slide presentations. Out of this conference emerged a consensus statement The Bellagio Declaration 2013: Countering Big Food's Undermining of Healthy Food Policies (1), which turned out to be remarkably similar to a recent Lancet comment (21).

### **The policy package for obesity prevention: the NOURISHING framework**

Hawkes, Jewell and Allen created an innovative World Cancer Research Fund framework focused on the food environment, food systems, and information and education using the acronym NOURISHING (22). Using this framework, they summarize many of the initiatives highlighted in the country presentations and point out that FOP and related food claims and labelling systems are the dominant food policies currently being utilized. The primary public sector efforts have been in schools, with conditional cash transfers and attention to pre-schools lagging. Except for the South African Vitality program and trade regulations in the Western Pacific Islands, economic incentives and disincentives have been few. Marketing regulations have faced major opposition in LMICs and have had minimal success getting implemented. In general, the efforts to create a healthy food supply, a healthy retail sector and a cohesive healthy food system have been limited at best. The education interventions have seen little documentation of effectiveness, although promising efforts are being made in Thailand (using a village-level cadre of trained volunteers), the UK (teaching cooking techniques in schools) and a few other locations. Hawkes *et al.* then summarize the scanty and patchy efforts to promote increased physical activity.

### **The Bellagio Declaration**

There were no preconceived expectations about what would emerge from the conference as the major issues, but the barriers to effective implementation of large-scale change soon became evident (1). Repeatedly, in country after country, the first and foremost barrier has been the Big Food sector pushbacks. Big Food has consistently taken strong overt and covert actions to oppose food policies that benefit public health. At the same time, governments demonstrate both a limited ability and, in some cases, an unwillingness to protect public policy development and implementation from these vested influences that seek to undermine them. Where strong civil support exists, groups have managed to overcome some of these barriers. Consequently, weak civil society support shares responsibility for the lack of government action on healthy food policies. This has been due to a lack of civil organizations; low funding; weak coordination; low priority for the issue; and a lack of capacity, skills and policy-relevant evidence. The Bellagio obesity conference participants were heartened that, in a major speech in Helsinki that week, WHO's Director General, Dr Margaret Chan, identified Big Food as a serious barrier to reducing obesity and NCDs. The Bellagio Declaration is calling for steps by governments, international agencies and civil society to ensure that, in public policy making, benefits to the health of the public



override the commercial interests of Big Food and not vice versa as has been the case around the world.

### What are the major policy research gaps?

The food system and shifts in diet have emerged as the major focal point for obesity prevention. Yet, with little monitoring of the food supply, almost no evaluation of national feeding efforts as they relate to overweight and obesity, and little understanding of the impact of modern food system changes, LMICs are at an extreme disadvantage. For example, a recent International Food Policy Research study on the entire food chains in China, Bangladesh and India (23) documents the rapid changes in how food supplies pass from farmer to retailer or manufacturer and the speed of the alterations in modern supermarkets in these three countries. In general, across many of the LMICs, the increase in supermarket and convenience store sales of packaged foods and beverages is rapid and documented, but almost no research has directly studied its impact on diet quality (24–26) aside from one study in Guatemala (27). The Monteiro *et al.* work noted in this supplement (3) uses indirect measurements from income and expenditure surveys and food balance surveys to approximate ultra-processed food intake, but direct measurements are scarce. The Informa system discussed in the Ng and Dunford paper represents one option (5).

However, the greatest research needs among LMICs are to justify and evaluate policies as they are implemented or analyse why they are not implemented. There are truly common issues related to policies: why isn't it being implemented, how to implement them, and when it is implemented what is the impact. The programs and policies that need strengthening from research include:

1. FOP labelling. While several higher income countries and LMICs have implemented such systems or are planning to do so, little is known about their impacts. The goal is a healthier diet with reduced energy intake. Important in the call for interpretive FOP labelling is the need to help fulfil the consumers' right to know what they are buying. In part, it is also considered that this nutritional signpost will stimulate some people to make healthier choices. The major areas of research are trials of different FOPs on purchases (now possible with FoodSwitch) (5), studies to understand why the FOP proposals get blocked and (if any country manages to achieve something) evaluate the impact on consumer and manufacturer behaviours and product reformulation. Studies should examine two areas – the impact on product reformulation and the impact on purchasing patterns and ultimately on dietary intake. This applies to both the FOP systems that caution against adverse foods (traffic lights, the proposed Chilean system) and those that designate healthier foods

(Choices). To date, there is no research on the actual impact on purchasing patterns or diet (28), although the Singapore paper in this issue suggests some dietary intake effects (14).

2. Restrictions on marketing. Very few countries have managed to institute national regulations to restrict the marketing of unhealthy foods to children. This has largely been because of the lobby pressure from Big Food and Big Soda. For many countries, the cross-border reach of marketing from global food companies makes it very difficult to restrict marketing to children. Strict laws with penalties, such as those banning tobacco advertisement in most high-income countries, are required (29).

3. Improvements in school food standards and options. The Hawkes, Jewell and Allen paper identifies a number of school policies that have made changes in food standards, but rigorous evaluations of these changes that determine the overall impact on the diets of children are needed (22).

4. Improvements in foods and beverages available at other public institutions. As the Mexican example illustrates (10), hospitals, government offices and schools are among the institutions that have banned selected products. Evaluations of the impact those actions have on foods consumed elsewhere have not been undertaken.

5. Food taxes and subsidies. Aside from one econometric study that showed a positive short-term impact of the Danish fat tax on food purchases, no study has appraised the actual effects food price policies have on NCDs or obesity (30). The Finnish government was very early in enacting importation and other major trade and pricing policies, but those policies were part of a more comprehensive program and were never directly evaluated (31–33). Many excellent country-specific studies of elasticities of demand look at price policy, but most broad reviews concentrate on higher income countries (34–36). The few studies on LMICs do not focus on complete demand models and thus only examine limited substitution effects (37). One exception, a study that uses a full-demand approach, is unpublished (38).

6. Other economic tools. A wide variety of price-incentive schemes can be coordinated with health insurance programs or tied with performance and work-related bonuses. The South African case study is a unique example of this application, and it has been evaluated. There are numerous opportunities across the food chain, particularly at the point of purchase, to establish economic incentives, but the impacts on diet and weight of the economic incentives that have been established have rarely been evaluated.

7. Improvements in the food supply. The trade restrictions in the Pacific Islands and the earlier ones in Finland and Norway (33) aimed at reducing saturated fat in diets are among the few documented programs dictated by

obesity- and NCD-related concerns that have had an effect on health outcomes. None has been directly evaluated for its impact on trade or overall consumption.

8. Retail environment changes. A large number of retailers in higher income countries have stated that they will adapt their environments to encourage a healthy diet (39–41). The new UK traffic light initiative is one example (8). None of these initiatives, voluntarily or otherwise, by retailers in any country have been evaluated for their impacts on purchasing behaviours. There are potential ways using commercial datasets that monitor food purchases of households that would allow impacts of these systems on purchases of consumers from various socioeconomic backgrounds to be assessed (42).

9. Healthier food offered at restaurants, by hawkers, and at other away-from-home venues. The Singapore hawker program is a great example that establishes the oversight needed, and its effects must be evaluated (14). By determining where the target population eats, officials can implement portion control, education, pricing and other structures to improve food quality and reduce the calories served.

10. Corporate voluntary efforts. A few of the major global packaged food and beverage companies have pledged to reduce marketing to children, to improve the quality of their offerings and to reduce their caloric footprints (6,43–47). To date, there is little to show that these company pledges have had any impact on the diets and food purchasing patterns of children or any other age group.

11. Information, education and community-based initiatives. Across the globe, the greatest efforts have focused on education, including dietary guidelines, social marketing and community-level initiatives, and school-based programs, such as the UK program to teach children how to cook. Local, whole-of-community initiatives, such as the Australian effort to link education with environmental changes, appear to have made significant progress (9), and some of these demonstration projects have been shown to have lasting effects similar to the French project (48) which was the precursor to the EPODE program (49). Programs in LMICs, such as the Thai program to institute a volunteer nutrition adviser for every 10 households to stem waist circumference growth, need rigorous evaluation.

We do not address the equally important necessity to increase physical activity and reduce sedentary behaviour. As the Hawkes *et al.* paper notes, there are few initiatives in this area, and appraisal is inadequate (22).

Evaluation research is critical for designing new policies to address obesity and to improve the effectiveness of existing ones. The papers in this issue highlight many promising initiatives. They also show the lack of knowledge about the best approaches to improve diets, reduce energy imbalance and reduce obesity in LMICs.

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## Conflicts of interest

None.

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