

The **Nutrition** **Impact Summit**

FOOD | WELLNESS | HEALTH CARE
Connecting Strengths, Inspiring Innovation, Scaling Up Solutions

September 21–23, 2016

Dallas, Texas

Participant Briefing Paper



WELCOME

From the President of the Academy of Nutrition and Dietetics

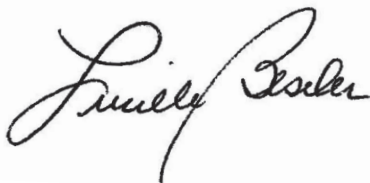
In 1917, a group of courageous women had a powerful vision: dedicated to addressing the leading health challenges of the day, they created an organization—and a profession—that would change the course of nutrition and health. A century after our founding, the Academy of Nutrition and Dietetics continues to build upon the legacy of our brave and inspirational founders.

Honoring our legacy means unflinchingly addressing the health challenges of the current century and the next. The Boards of Directors of the Academy and our Foundation welcome these challenges as opportunities to collaborate with groups and individuals who—like the Academy—are committed to improving the health of people across the globe.

This briefing paper was written to help prepare each of us for The Nutrition Impact Summit. At the Summit, we will consider how we might accelerate progress toward good health and well-being for all people through collaboration across food, wellness and health care systems. Please read the briefing paper and come to the Summit prepared to think boldly about the future we can create together.

Thank you for participating in the Nutrition Impact Summit. We look forward to seeing you soon.

Yours in health,

A handwritten signature in black ink, reading "Lucille Beseler". The signature is fluid and cursive, with the first name "Lucille" written in a larger, more prominent script than the last name "Beseler".

Lucille Beseler, MS, RDN, LDN, CDE, FAND
President, Academy of Nutrition and Dietetics

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INTRODUCTION

Imagine a world where agricultural systems at all scales are optimized to produce nutrient-dense and delicious foods, using methods that protect precious soil, water and air resources and are resilient to climate change and water scarcity. A world where food waste has been designed out of the system and where food access for all is a fundamental priority. Where special attention to the needs of adolescent girls, pregnant and lactating women, infants and children has eliminated stunting and wasting and enabled whole generations to achieve their full potential as citizens. A world where advances in social science and behavior change, combined with new technology platforms and innovative wellness programs, have turned the tide on obesity and the preventable health problems it drives. Where a customized, patient-focused, prevention-based health care system—with food and nutrition at its core—has reduced health care costs and improved quality of life for billions of people.

We believe such a future is possible by changing the global health trajectory—but only with unprecedented leadership, collaboration and innovation among leaders across the food, wellness and health care systems.

The impetus for change is already underway. Last year, the Sustainable Development Goals were launched, with 17 transformative targets for all countries to work toward. Food and nutrition is at the top of the agenda—Goal #2 calls for an end to hunger and all forms of malnutrition.¹ And in April, the United Nations and the World Health Organization declared the next 10 years will be the “Decade of Action on Nutrition,” calling for intensified action to eradicate malnutrition worldwide and ensure universal access to healthier and more sustainable diets.²

This global momentum marks a time for action. That’s why the Academy of Nutrition and Dietetics and its Foundation have convened The Nutrition Impact Summit.

The Summit is bringing together an extraordinary group of diverse leaders from those systems for a rare opportunity to spend three days focusing on collaborative action, with this central question driving our work: **How might we accelerate progress toward good health and well-being for all people through collaboration across food, wellness and health care systems?**

At the Summit—and in this paper—the focus is on identifying opportunities to connect our strengths, build on our successes and commit to action around solutions. For participants the Summit is an opportunity to make new connections, strengthen relationships with peers, share ideas for innovation across different parts of the system and find new ways to work together.

In this paper, we highlight successful innovations already underway and present opportunities we’ve identified to help accelerate progress toward a future of wellness for all people.

As this paper makes clear, many individuals and organizations around the world are making great strides to address malnutrition in all its forms. There is undeniable progress and growing awareness of the need for collaborative solutions in food and nutrition—for all people, whoever they are and wherever they live.

As the Academy is approaching its centennial in 2017, we are looking at the profession’s accomplishments over the past 100 years and seeking to have a greater global impact in our second century. This vision is being created in the spirit of commitment to collaboration and service and with an emphasis on accelerating the progress toward solving the greatest food and nutrition challenges of the 21st century. Convening The Nutrition Impact Summit with thought leaders, innovators and practitioners in the food, wellness and health care systems is an example of this commitment to collaboration. Through this powerful systems-based approach, we will envision and achieve improved health for the population through the transformative power of food and nutrition.

“Let food be thy medicine.”

–Hippocrates

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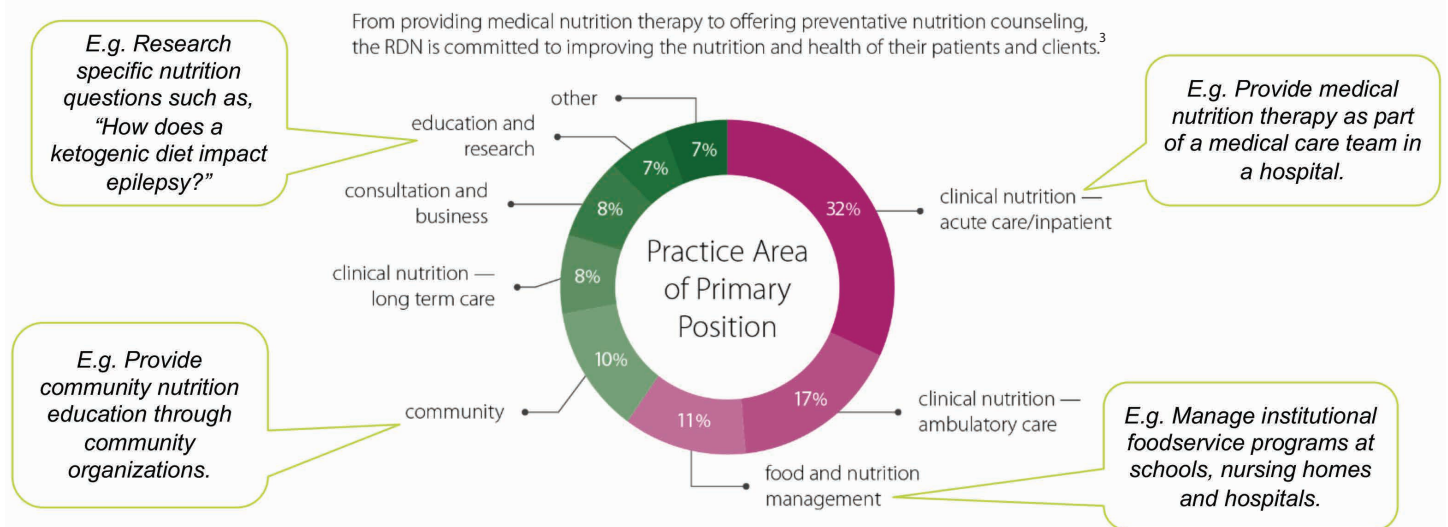
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1

BACKGROUND ON THE ACADEMY, ITS FOUNDATION AND THE NUTRITION AND DIETETICS PROFESSION TODAY

The Academy of Nutrition and Dietetics (Academy) is the world's largest organization of food and nutrition professionals, representing more than 100,000 registered dietitian nutritionists (RDNs) and nutrition and dietetic technicians, registered (NDTRs). Members work across the food, wellness and health care spectrum in hospitals, schools, academia, business, prevention, management, public health, agriculture and private practice. The profession's practitioners serve more than 20 million clients and patients each year and provide reliable and evidence-based nutrition information for the public. For additional details on registration requirements for RDNs and NDTRs, please see the [Appendix](#).

What do nutrition professionals do?



The Academy of Nutrition and Dietetics Foundation (Academy Foundation) was established in 1966 as a 501(c)(3) public charity and is the only charitable organization devoted exclusively to promoting nutrition and dietetics, funding health and nutrition research as well as improving the health of communities through public nutrition education programs. The success and impact of its programs and services are attributed to the generous support of its donors, which have helped the Foundation become a catalyst for Academy members and the profession to come together to improve the nutritional health of the public.

THE FOOD, WELLNESS AND HEALTH CARE SYSTEM

At the Summit, we are convening experts, thought leaders, innovators and practitioners from three interconnected systems: food, wellness and health care

The **Food System** creates and provides the food that, once consumed, provides the nutrition that people need to survive and thrive. This system includes farmers, ranchers, fishermen, agribusiness companies, universities, food transport companies, food companies, food distributors, retailers, restaurants, foodservice companies, food and nutrition research and advocacy organizations, Cooperative Extension System (CES) and government agencies related to food and agriculture, among others.

The **Wellness System** provides products and services aimed at enhancing people's health and well-being, with optimal nutrition as a key focus. This system includes nutrition and dietetics professionals, prevention researchers and advocacy organizations, academics, chefs, personal trainers and experts in exercise science and sports medicine, manufacturers of vitamin and mineral supplements, health and nutrition coaches, spiritual and religious leaders, fitness centers and gyms, innovators in digital platforms that provide recipes and guidance on eating and physical activity, media outlets and other companies with wellness offerings.

The **Health Care System** uses nutrition to keep people healthy, prevent disease and treat acute and chronic diseases, many of which are impacted positively or negatively by nutrition. This system includes doctors and other clinical specialists, including nutrition and dietetics professionals, nurses and other members of the health care team, behavior change and mental health professionals, companies providing medical products and services, hospitals, health insurers, government agencies dealing with human health and the regulation of health care practices, research and advocacy organizations, academics and companies with innovative health care offerings.

***“I’ve got a hunk of gold
and you have a watch. If we
trade, then I have a watch
and you have a hunk of
gold. But if you have an
idea and I have an idea and
we exchange them, then we
both have two ideas.”***

–From the book *Abundance: The Future Is
Better Than You Think* by Peter H. Diamandis
and Steven Kotler

BACKGROUND FOR THE SUMMIT

What is Appreciative Inquiry?

The Nutrition Impact Summit design utilizes Appreciative Inquiry, pioneered by David Cooperrider, Professor of Appreciative Inquiry at the Weatherhead School of Management at Case Western Reserve University. This structured, highly interactive process enables participants to connect with the strengths of the system, explore opportunity areas, prototype solutions and create a practical action plan—all in the course of a three-day event. This summit model has been used in a wide variety of contexts to create large-scale positive change by engaging a broad range of stakeholders. Varied groups have used this approach, including the United Nations Global Compact, the United Religions Initiative, the U.S. Navy, Walmart, the U.S. Dairy Industry and the City of Cleveland.

What is Appreciative Inquiry? To appreciate means to value—to understand those things worth high esteem. To inquire means to study, to ask questions, to explore. Appreciative Inquiry is, therefore, a collaborative exploration aimed at identifying and understanding a particular group's strengths, their greatest opportunities and their aspirations for the future—and building a shared action plan that will help construct that future.

Unlike a purely educational event or conference, the Summit is task-focused. It's designed to be engaging, energizing and fun, but it is serious fun with the goal of system-level change.

An Appreciative Inquiry Summit is a whole-system working meeting that engages a cross-section of as many stakeholder groups as possible—leaders and organizations that care about and have a stake in the issue at hand. Each person and stakeholder group will have an opportunity to be heard and to be exposed to other perspectives on the challenges and opportunities facing the group.

For more information about Appreciative Inquiry, please see <http://appreciativeinquiry.case.edu>.

PREPARATION FOR THE SUMMIT

In advance of the Summit, more than 125 interviews were conducted with a range of actors from across the three systems. Much time was spent researching to learn about the efforts of individuals and organizations dedicated to various aspects of improving health for the population through food and nutrition. The objective was to view this landscape through a lens of new possibilities, rather than overly focus on what is happening today.

We sought to identify new models that are overcoming longstanding barriers. To find people and organizations that have a vision for transformational change and a plan to make it happen. To discover innovators who are changing the rules of the game.

Who will be at the Summit?

Approximately 180 people will attend the Summit. The attendees, of whom roughly half are Academy members, represent organizations across the food, wellness and health care systems, including representatives from the food and agriculture sector, the health and fitness community, academia, research and advocacy groups, government agencies, the health care industry, nonprofit NGOs and both medical and information technology.

What happens after the Summit?

We will develop a shared vision and a set of ideas for collaborative action at the Summit. Afterward, those who are interested in pursuing the innovation projects that have been generated will have an opportunity to further develop these initiative ideas and bring them to life. The Academy is committed to supporting the development of collaboration projects where we can help accelerate impact.

Challenges and Opportunities

In the following sections, we summarize specific global nutrition challenges facing the food, wellness and health care systems and then offer 13 opportunities within six focus areas that present great potential for collaborative action and innovation. A brief description of each area is presented to provoke inspiration and ideas. Just as the innovators highlighted do not represent an all-inclusive list, the recommended opportunities for action are not presented as a finite set of potential solutions. Rather, the ideas highlighted are intended as a starting point for conversation and collaboration to be added to and further developed at the Summit.

“An investment in nutrition can help make every other investment in health and development pay off.”

–Bill Gates, April 2016

2

GLOBAL NUTRITION CHALLENGES

These challenges are areas for exploration and action at the Summit, but are not intended to be an exhaustive list.

FOOD AND NUTRITION SECURITY

Today, despite all the technological advances of the 21st century, millions of people across the globe lack access to enough nutritious food to sustain healthy lives. Consider these alarming statistics:

- Of the 7.3 billion people living in the world today, 2 billion suffer from one or more forms of malnutrition—underweight, overweight, micronutrient deficiency,⁴ and malnutrition is the cause of one-third of all childhood deaths annually.^{5,6}
- Undernutrition is considered the top risk to human health worldwide,⁵ and micronutrient deficiencies of vitamin A, iron, iodine and zinc are leading causes of anemia, mental retardation, brain damage, blindness and stunting.^{7,8}
- A loss of 2 to 3 percent of a country's Gross Domestic Product (GDP) can be attributed to iron, iodine and zinc deficiencies.⁹
- The United Nations Food and Agriculture Organization (FAO) estimates that about 800 million people—one in nine—suffered from chronic undernourishment in 2014 to 2016.¹⁰
- Even in the wealthiest nations, malnutrition exacts a major toll on individual well-being, as well as the society as a whole: malnutrition rates in hospital patients are approximately 35 percent, and 30 to 55 percent of patients admitted to acute hospitals are at risk of malnutrition.¹¹
- More than 48 million Americans live in food-insecure households, including 1 in 5 children.¹²
- Nearly 800 million people lack access to clean water, causing 1,000 child deaths every day.¹³
- Overweight and obesity and their associated non-communicable diseases (NCDs), including cardiovascular diseases, diabetes, cancers and musculoskeletal disorders, contributes to at least 3 million deaths around the world annually.^{14,15,16}
- Twelve percent of global health expenditures is spent on diabetes alone.¹⁷
- Between 2000 and 2012, the World Health Organization estimated that more than 1 billion disability-adjusted life years (DALYs) were attributed to NCDs.¹⁸

Food waste is part of the challenge to fulfilling the nutritional needs of people—and to conserving precious resources—today and for future generations. One-quarter to more than one-third of all food produced globally goes uneaten each year—an estimated 1.3 billion tons annually, despite the growing burden of malnutrition.¹⁹ Food is wasted at every stop in the supply chain¹⁹—from imperfect fruit and vegetables abandoned in the fields to refrigerated “out-of-date” perishables thrown out as household garbage. In developing countries, 40% of food losses occur between field to marketplace, where challenges include access to proper storage and refrigeration to ensure food safety,²⁰ while in the United States, the average consumer wastes 1.1 pounds of food per day or approximately 401.5 pounds per person each year.²¹ More than 97 percent of food wasted in the United States ends up in landfills where it decomposes and produces methane,²¹ a potent form of greenhouse gas.

ENVIRONMENT, BEHAVIOR AND CHOICE

Eating healthy, nutrient-rich food is a choice that too many people don't—or can't—make. A scarcity of nutritious food plagues communities across the globe, in countries rich and poor. Poverty remains a major force behind malnutrition, because purchasing power largely determines a person's ability to access nutrient-dense food. Beyond that, factors such as income and geography can also make a difference when it comes to nutrition and healthy lifestyles. In 2014, 46.7 million Americans (14.8%) were living in poverty, including 15.5 million

children under the age of 18 and 4.6 million seniors,²² while about 23.5 million Americans live in food deserts, most in low-income or rural areas.²³ And the built environment—especially in urban areas—often restricts people's ability to be physically active. Meanwhile, those who have the money to access nutritious foods don't always take advantage of them. Some are too busy to prepare healthy meals or they lack the knowledge, resources or skills to improve their diets and their health. The effects of these lifestyle factors cascade from the individual to the entire health care system. Recent findings suggest that more than a quarter of health care costs were associated with obesity, among other risk factors.²⁴ And too often, the places where people spend a lot of time do not support healthy lifestyle choices.

PREVENTION AND HEALTH CARE

Rates of preventable chronic NCDs are skyrocketing globally, driving up health care costs in their wake. Worldwide, 2.8 million people die each year as a result of being overweight or obese and another 35.8 million (2.3 percent) global DALYs lost are the result of overweight and obesity alone.²⁵ At the same time, globally, 2 billion people are malnourished and 159 million children are stunted.²⁶ Among Americans, chronic diseases are responsible for 7 of 10 deaths annually and the cost of treating people who suffer from these conditions consumes 86 percent of the nation's health care spending.²⁷ Many of these conditions can be prevented with healthier diets and more physical activity; however, doctors often rely on prescription drugs to treat these conditions because they lack the tools to support behavioral changes for their patients. Case in point: A survey conducted to determine nutritional knowledge among physicians showed that while 94 percent agreed that nutritional counseling should be a part of the visit with a patient, only 14 percent of doctors felt they had adequate training to do so.²⁷

RESEARCH AND STANDARDS

Gaps in nutrition research and data are a major barrier to advancing progress on global nutrition.²⁸ And often, the data that are available aren't sufficient to convince a public that generally distrusts research findings and/or to erase widespread confusion about nutrition. More than three-quarters of consumers find it hard to know what to believe when there is a change in nutrition guidance.²⁹ Meanwhile, the lack of a clear set of nutrition standards and metrics for evaluating progress restricts researchers' ability to secure the ongoing funding they need to battle malnutrition in its many forms. Among other obstacles: the lack of models of trusted, public-private collaboration to support high-quality nutrition research, as well as the need for open-access platforms for curating research and reporting outcomes.

GLOBAL WORKFORCE CAPACITY

Too few qualified workers are available globally to address the alarming scale and scope of malnutrition in all its forms. Demand far outstrips supply when it comes to people who are educated and properly prepared to provide nutrition guidance, help develop sound nutrition policies and strategies and lead change at the highest levels. There is a huge variation in training requirements for dietitians and nutritionists globally and in the number of nutrition professionals per capita around the world, from more than 25 per 100,000 people in countries like Denmark, Israel and Japan to fewer than 2 nutrition professionals per 100,000 people in countries like India and Malaysia. Even in the United States, Australia, Ireland and the Netherlands, there are only 16 to 20 dietitians per 100,000 people.³⁰

In many countries where nutrition need is greatest, no nutrition programs are offered by academic institutions. And training materials that do exist in these nations are often woefully outdated. Even in countries where the professional standards for nutrition educators are high, there is an urgent need to equip peer coaches, health and wellness professionals, community leaders and even more educators with best-in-class nutrition education to disseminate nutrition knowledge and skills to all citizens. The development of a truly global workforce to address malnutrition must address these disparities as part of an overall capacity building strategy.

INVESTMENT

The current level of global investment—from both public and private sources—falls far short of what's needed to drive improvements in sustainable food and address global malnutrition. According to researchers, if the set of 10 proven interventions to improve maternal and child nutrition were scaled to 90 percent coverage across 34 countries, the number of stunted children in the world could be reduced by 80 percent.³¹ But money spent on nutrition by governments and NGOs isn't sufficient to achieve this goal. The critical potential of private-sector engagement has not been realized. For example, every \$1 of investment in nutrition generates a \$16 return in health and economic development and for every day a child does not get adequate nutrition, it costs a country between 4 percent and 11 percent of GDP.^{32,33} Additionally, while sustainable and responsible investing is poised to change the trajectory of poverty, education and clean energy, very few impact investors have ventured into the realms of nutrition interventions and sustainable food and agriculture.

3

OPPORTUNITIES FOR COLLABORATION AND INNOVATION: **SUMMARY**

Through our research, we have identified a set of 13 opportunities within six focus areas that demonstrate strong potential for collaborative action and innovation. A brief overview is presented in this section with more details provided in the next section.

FOOD AND NUTRITION SECURITY

Ensure all people have reliable access to culturally appropriate, nutrient-dense food and clean water now and in the future by building resilient food systems and prioritizing actions to prevent and divert wasted food throughout the value chain.

1. Increase resilience and productivity of global food systems while minimizing negative impacts on people, animals and the environment.
2. Prioritize actions to prevent and divert wasted food at all stages of the food value chain to provide nutrient-dense food for people who need it while benefitting the environment, society and the economy.
3. Engage all points of contact in the food, wellness and health care system to ensure vulnerable populations have access to nutrient-dense foods.

ENVIRONMENT, BEHAVIOR AND CHOICE

Create a culture and environment that support health and wellness through relevant and appealing solutions for all places where people spend their time—home, work, schools and communities.

4. Use information technology, kitchen technology, business model innovation and insights from social science to enable and support better decision-making and enduring behavior change.
5. Use innovation in urban planning and the built environment to improve health at the community level.
6. Support healthy choices by scaling programs that create a culture of health at worksites, schools and throughout the community.

PREVENTION AND HEALTH CARE

Improve health outcomes and decrease health disparities by accelerating the shift to a preventive health care model and using new technologies to individualize nutrition care.

7. Accelerate the shift in the health care system to emphasize preventive care, especially through an increased focus on diet and physical activity.
8. Use health care technology, information technology and new medical nutrition therapies to better customize nutrition solutions for individuals.

RESEARCH AND STANDARDS

Implement models of trusted, public-private collaboration to support high-quality nutrition research, metrics and standards creation and open-access platforms for curating research and reporting outcomes.

9. Create standardized models for quality, collaborative, transparent and well-curated food and nutrition research to accelerate our understanding of food's role in health and eliminate all forms of malnutrition.
10. Support continuous progress towards a healthier world by collaborating to create credible reporting standards to publicly track the measurable commitments made by stakeholders.

GLOBAL WORKFORCE CAPACITY

Grow the number of trained nutrition professionals and dietitians globally and embed nutrition knowledge broadly to increase nutrition capacity and reach global health goals.

11. Expand education, training and credentialing for a workforce that meets global needs of the future.
12. Embed nutrition knowledge broadly throughout society with education, training and certificates targeting practitioner allies in the food, wellness and health care sectors.

INVESTMENT

Accelerate progress and explore collaborations to drive investment in nutrition outcomes.

13. Catalyze an increase in investment focused on driving improvements and scaling solutions in sustainable food systems, prevention and wellness, health care and building capacity for a global nutrition workforce.

4

OPPORTUNITIES FOR COLLABORATION AND INNOVATION: DETAILS

This section presents a premise for each opportunity area, with highlights of innovations and innovators and provoking thought-starter questions for your consideration.

FOOD AND NUTRITION SECURITY

Focus: *Ensure all people have reliable access to culturally appropriate, nutrient-dense food and clean water now and in the future by building resilient food systems and prioritizing actions to prevent and divert wasted food throughout the value chain.*

Global malnutrition is the most profound and far-reaching challenge of the 21st century. It is a condition that affects 1 in 3 people, affecting women and children disproportionately.³⁴ Its effects range from childhood stunting and wasting to rising rates of obesity. And the clock is ticking.

Far too many people don't have reliable access to enough food, the right food or quality nutrients or clean water. At the same time, far too much food is wasted. Combined with population and economic growth—and the reality of climate change—our prospects for the near future are sobering. They are also eminently solvable.

Malnutrition and its widespread effects have become a galvanizing call to action, bringing together entire nations, multiple food systems and organizations in promising new ways.

Today, people around the world are learning to connect the dots across our global, interdependent food systems. From support for smallholder farms to dynamic public-private partnerships and holistic, community-led health and nutrition initiatives, innovators are finding creative new ways to remove systemic barriers. Stakeholders are collaborating to make food production and distribution more efficient and resilient for the future and lifestyles more sustainable.

Agriculture and food systems worldwide are increasingly marshalling a diverse and growing array of production innovations and agricultural tools to produce more food while also conserving soil and forests and enhancing biodiversity.

In fact, agriculture is becoming part of the solution to climate change. Sustainable practices are helping improve soil health, reduce water usage and increase yields on existing land, while integrated land-use planning is preserving arable croplands.

Leaders are also teaching the public how to prevent food waste—a core component of the Academy's public education efforts since our beginnings—and to give nutritious but “ugly” produce a chance.

The Environmental Protection Agency (EPA) Food Recovery Hierarchy provides guidance on what to do with excess or imperfect food. Additionally, a public service campaign launched by the National Ad Council and National Resource Defense Council (NRDC) is inspiring Americans to “Save the Food” by showcasing the life cycle of food and the loss of resources when it is needlessly wasted.³⁵

A 20 percent reduction in food waste would save 1.8 billion meals and reclaim the 1,250 calories per capita that goes into landfills each day, feeding the global food-insecure three times over.²⁰

New attitudes about food waste, combined with innovations in agriculture and collaboration across global food, wellness and health care systems, hold enormous potential for positive change. We are converging as never before to create more resilient food systems that provide equitable access to quality nutrients, employ environmental stewardship practices, support the ethical and humane treatment of people and animals and contribute to community wealth.³⁶

And the momentum is growing. In the last five years, the Scaling Up Nutrition (SUN) movement has brought together governments, civil society, the United Nations, donors, businesses and researchers in a collective effort to improve nutrition globally.³² Last year, the Sustainable Development Goals were launched, naming 17 transformative targets for all countries.¹

Central to the goals: achieving food and nutrition security. Sustainable Development Goal #2 calls for an end to “all forms of malnutrition.”³⁷ It is imperative to ensuring a peaceful, prosperous world.

As such, the first step is to take an unprecedented action: collaborating to end malnutrition in all its forms. In April this year, the United Nations and the World Health Organization declared the next 10 years will be the “decade of action on nutrition.”² Now, like never before, we have an opening for action and the systemic will to end malnutrition everywhere.

“This [2015 U.N.] resolution places nutrition at the heart of sustainable development and recognizes improving food security and nutrition are essential to achieving the entire 2030 Agenda... Children can’t fully reap the benefits of schooling if they don’t get the nutrients they need; and emerging economies won’t reach their full potential if their workers are chronically tired because their diets are unbalanced. That’s why we welcome the Decade of Action on Nutrition and look forward to helping make it a success.”

—José Graziano da Silva, Director-General of the U.N. Food and Agriculture Organization, 2015

OPPORTUNITY AREA

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Increase resilience and productivity of global food systems while minimizing negative impacts on people, animals and the environment.

INNOVATIONS IN ACTION:

SOIL HEALTH

- Microbial Soil Inoculation has potential to restore degraded lands and improve soil fertility and water quality.^{38,39}
- The Living Soil Saves Lives program trains rural farmers in India on the “soil food web” and composting techniques to improve soil fertility.

WATER USE AND WATER QUALITY

- New technologies to improve irrigation efficiency will address water scarcity and unpredictability. Increased use of drip irrigation, soil moisture sensors, rainfall monitoring and water sensors will be essential.⁴⁰

PRODUCTION AND FARMING INNOVATION

- Growers are exploring alternative farming methods such as hydroponics, aquaponics, aeroponics and vertical farming—sustainable practices supported by the USDA that can apply to urban environments.
- Genetically Modified (GM) crops offer solutions to improve yield in the face of problems associated with climate change. For example, crops have been adapted to enhance tolerance to a range of stresses including drought, flood, salinity or extreme temperatures.⁴¹ Additionally, exploration of nutrition and climate resilience has led to new varieties of rice that can survive flooding for weeks.⁴²
- CRISPR technology, short for Clustered Regularly Interspaced Short Palindromic Repeats, allows for more precise

plant gene editing. This quicker, less costly method of plant breeding is showing promising results in wheat, rice, soybeans, potatoes, oranges and tomatoes.^{43,44}

- Algae are among the new or underutilized crops being explored for use in agriculture. They could have promising potential for animal feed, biofuels, water filtration and human foods.^{45,46,47}

FUNDING AND FINANCING ADVANCES

- Innovations in digital financing technologies securely provide financing to rural smallholder farmers—while improving transparency and minimizing corruption within the food value chain. By transitioning from cash payments for crop income to mobile payments, agriculture developers can help build the infrastructure that will serve the savings, credit and microinsurance needs of rural, village-based economies.⁴⁸
- Organizations like Grameen Bank are providing smallholder farmers access to microcredit so they can invest in sustainable farming technologies.

FOOD AND AGRICULTURE DEVELOPMENT

- The 2014 G8 conference launched the Feed the Future alliance to help sustain inclusive agricultural growth. Its goal: Raise 50 million people out of poverty in the next 10 years by investing \$10 billion in African

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agriculture. Private investments have reached 8.2 million smallholders and created more than 21,000 jobs in 2014, more than half of which were for women.⁴⁹ Development partners have disbursed \$2.3 billion to date.⁴⁹

- Grow Africa is a public-private partnership of governments, companies and farmers to lower the risk of investment in agriculture in Africa. Its investments focus on farmers, youth and women.
- CGIAR is the only worldwide partnership addressing agricultural research for development to tackle

poverty, hunger, nutritional imbalances and environmental degradation.

FORTIFICATION

- Organizations like Sight and Life are working to improve nutritional outcomes by advancing access to fortified foods. Micronutrient fortification of food staples and food aid commodities can affordably help alleviate regional dietary deficiencies, providing critical vitamins and minerals to populations without radical changes in food consumption patterns.⁵⁰



THOUGHT-STARTER QUESTIONS:

1. How can we work together to ensure that nutrition security needs are fully integrated in efforts to develop more resilient and adaptive food systems?
2. How can we work together to better understand the innovation required to ensure resilient and adaptive food systems and help translate those complexities for consumers?
3. How can we work together to increase understanding of local and global food systems among those providing nutrition and food advice to consumers?

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Prioritize actions to prevent and divert wasted food at all stages of the food value chain to provide nutrient-dense food for people who need it while benefitting the environment, society and the economy.

INNOVATIONS IN ACTION:

FARM TO MARKET/TABLE

- Project Nurture, an \$11.5 million partnership of the Bill & Melinda Gates Foundation, The Coca-Cola Company and TechnoServe, aimed to help more than 50,000 small-scale mango and passion fruit farmers in Kenya and Uganda double their fruit incomes by 2014—while dramatically reducing food waste by providing business and agronomy training, improving market linkages and providing access to credit.⁵¹
- YieldWise, a \$130 million program funded by the Rockefeller Foundation, is working to demonstrate how the world can halve food loss by 2030, with an initial focus on fruits, vegetables and staple crops in Kenya, Nigeria and Tanzania. The program is helping farmers access technologies and solutions to prevent crop loss, engaging global businesses in accounting for food lost and wasted in their supply chains and more.⁵²
- Barstow's Longview Farm in Massachusetts, a community anaerobic digester project, receives organic material from 15 different food companies and saves food from the landfill. The food and manure goes into the dairy farm's digester, generating renewable energy and sustainably fertilizing 400 acres of farmland.⁵³
- FoodCorps, Master Gardeners and many other organizations are working to increase school and community gardens, educating children and their families on how to grow, preserve and prepare their own produce.

CONSUMER, RETAIL AND FOODSERVICE

- The National Virtual Resource Center (NVRC) for Food Loss and Waste is a USDA collaboration with 14 other NGOs, including the Academy, that provides one-stop information on best practices for preventing, recovering and recycling food waste. It will offer educational materials, research results and government, business and community initiatives designed to drive wider adoption of effective waste reduction activities.
- Imperfect Produce has a mission: to “find a home for ugly fruits and vegetables.” It is partnering with the grocery retailer Whole Foods to reduce the amount of ugly produce going to waste.⁵⁴ The Giant Eagle chain of grocery stores has a similar initiative: “Produce with Personality.” Safeway in Canada, Fruta Feia in Portugal, Intermarche in France and Waitrose in the UK have invested in similar programs.⁵⁵
- In the farm-to-foodservice realm, a pilot program from Bon Appetit known as “Imperfectly Delicious Produce” links farmers to distributors and creative chefs, encouraging the use of fruits and vegetables that would otherwise go to waste.
- Misfit Juicery makes cold-pressed juice from surplus ‘ugly’ fruits and vegetables that would otherwise be unsold or unharvested.
- Walmart’s new private-label food products now say “best if used by,” showing consumers that food is still safe to eat after the date listed on

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the package.⁵⁶ A consumer labeling solution in development, The Bump Mark, changes its texture over time to model the decay process of food.

- Lean Path software tracks waste from foodservice operations so chefs can tailor their purchasing and cooking habits to waste less food.

FOOD DONATION, RECOVERY AND SECONDARY MARKETS

- The app Zero Percent connects restaurants and event management teams to food pantries and is already serving 983,000 meals per week.⁵⁷ Drivers deliver excess food to the hungry.
- Spoiler Alert in Boston maps and connects excess food-to-food pantries and helps companies on both sides track their tax benefits.
- D.C. Central Kitchen and L.A. Kitchen are nonprofit organizations that provide culinary training programs to teach youth and unemployed adults how to prepare and serve nutritious meals for hungry members of the community. The Campus Kitchens Project extends this work to college campuses to develop students as leaders of feeding the hungry; they are in more than 50 U.S. schools.
- The Global FoodBanking Network reduces food waste and hunger by providing food banks in 30 countries with training, connections, expertise and financial support. Feeding America, a national network of food banks, collects and distributes excess food to local food pantries and hot meal programs for low-income clients.



THOUGHT-STARTER QUESTIONS:

1. How can we raise awareness through quantifying nutrients lost through food loss and waste to engage health care providers and other partners to make the connection between food waste and food insecurity?
2. How can we work together to create a deeper understanding of the connections among overconsumption, obesity, food loss and waste and food insecurity?
3. How can we work together to identify, assess and scale the most impactful behavior change efforts that can reduce consumer-driven food loss and waste?

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Engage all points of contact in the food, wellness and health care system to ensure vulnerable populations have access to nutrient-dense foods.

INNOVATIONS IN ACTION:

FOOD PRESCRIPTION INNOVATION

- The Food Pharmacy provides a referral to patients who are food-insecure, enabling them to receive two to three days of free healthy food for their whole family once a month for six months. The program was created by ProMedica, a Northwest Ohio and Southeast Michigan health care network, in partnership with two local food banks.
- Wholesome Wave offers the FVRx Program, which enables health care providers to give families innovative prescriptions that can be spent on fruits and vegetables at grocery stores, farmers' markets and other healthy food retailers. Since 2010, 18 programs in 10 states have helped 6,134 low-income families.⁵⁸ In June 2016, it announced a \$1.2 million grant from Target to launch the largest program yet, serving 500 low-income pediatric patients and their families in Los Angeles.⁵⁹
- Gardens for Health International (GHI) is addressing malnutrition in Rwanda using agriculture—integrating garden programs and nutrition education at health centers where women receive care. Women are given seedlings for kitchen gardens and small livestock (i.e. chickens and rabbits) to increase diet quality and diet diversity for themselves and their families. The Academy Foundation has awarded a Fellowship for Janice Giddens, MS, RDN, to spend a year on the ground with GHI developing and implementing an antenatal nutrition, child feeding, hygiene and food safety

program into the gardening program at health centers.

PRIVATE AND COMMUNITY INTERVENTIONS

- Founded by pediatrician Dr. Mark Manary, Project Peanut Butter produces Ready-to-Use Therapeutic Foods (RUTF), such as fortified peanut butter, in local factories in Malawi, Sierra Leone and Ghana and distributes them through mobile clinics where nurses assess children for malnutrition and provide lifesaving treatment to those who qualify at no cost. In initial trials of the program, 95 percent of undernourished children who received the RUTF and treatment recovered.⁶⁰
- The USDA Food and Nutrition Service (FNS) offers 15 domestic nutrition assistance programs and services, including:
 - The Supplemental Nutrition Assistance Program (SNAP, formerly the Food Stamp Program), which has helped more than 46 million Americans afford adequate, nutritious food in 2014.⁶¹ More than 90 percent of SNAP benefits go to households living below the poverty line⁶² and more than 4 million low-income adults over age 60 rely on SNAP to stay healthy and make ends meet.⁶³ Recent SNAP innovations include the Healthy Corner Stores Guide, mobile solutions for food deserts and SNAP access at farmers' markets (more than 3,200 U.S.

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- markets accept SNAP benefits).⁶⁴
- National School Lunch Program (NSLP) has provided subsidized meals to public schools since 1946. Nutrition standards for the NSLP and National School Breakfast Program were updated in 2012 to include increased portions and portion sizes of fruits and vegetables as well as stricter limits on trans fat, saturated fat, sodium, calories and sugar-sweetened beverages.⁶⁵
- The USDA's Women, Infants and Children (WIC) supplemental food program is widely seen as one of the nation's most successful and cost-effective nutrition intervention programs—the program has dramatically reduced health care costs by providing prenatal services and promoting breast-feeding.⁶⁶
- The U.S. Health and Human Services' Older Americans Act is considered to be the major vehicle for the organization and delivery of social and nutrition services to this group and their caregivers. It authorizes a wide array of service programs through a national network of 56 state agencies on aging, 629 area agencies on aging, nearly 20,000 service providers, 244 Tribal organizations and 2 Native Hawaiian organizations representing 400 Tribes.⁶⁷
- The Root Cause Coalition is a national, member-driven, nonprofit organization founded by AARP and ProMedica that addresses the root causes of health disparities. It focuses on hunger and other social determinants that lead to nationwide epidemics of preventable chronic health conditions. The coalition commissions and engages in compelling research on the correlation of hunger to overall health, advocating for relevant public policy and deploying strategies and programs that focus on meeting the access, nutrition and education needs of individuals and communities.
- The Food Trust works with neighborhoods, schools, grocers, farmers and policymakers in Philadelphia and across the country to develop a comprehensive approach to improved food access, combining nutrition education and greater availability of affordable, healthy food.



THOUGHT-STARTER QUESTIONS:

1. How can we work together in innovative partnerships to create scalable models that bring affordable, nutrient-dense food to low-income and food-insecure populations?
2. How might we work together to ensure access by all infants and children to safe, nutritious and sufficient food all year round to eliminate stunting and wasting?
3. How can we accelerate progress towards meeting the nutritional needs of special populations, including adolescent girls, pregnant and lactating women and older persons by 2030?

ENVIRONMENT, BEHAVIOR AND CHOICE

Focus: Create a culture and environments that support health and wellness through relevant and appealing solutions for all places where people spend their time—home, work, schools and communities.

The world around us exerts a powerful influence on our behaviors and choices. But strong impetus for healthy change is at work in our communities, institutions, policies and technologies.

Today, technology innovators, health care organizations and the food and nutrition community are discovering effective new ways to improve individual health by engaging patients in their own care through new technology.

Multiple technology innovators are pooling their knowledge of how consumers interact with food and think about well-being to help people solve daily health problems, wherever people go. Consider the rise of popular activity trackers like Fitbit and consumer health technologies that monitor hydration levels and assist in the management of chronic conditions such as by measuring blood sugar.

The food, wellness and health care sectors are also actively sharing data insights and joining existing public-policy partnerships to inform and drive holistic health solutions.

At the same time, social media, smart phone technology and news apps have contributed to the 24-hour news cycle and are a part of this environment, generating millions of articles, blog posts, recipes, fact sheets and more that influence consumer choice and contain often conflicting information related to health and wellness. Indeed, a simple Google search using the terms “healthy eating tips” generates nearly 6 million results in less than a second.⁶⁸

Now more than ever, communicating sound health and nutrition information is of paramount importance to dispel consumer confusion and reinforce consumers’ confidence in taking control of their own health. The Federal Trade Commission (FTC) recently tightened its guidelines surrounding food/product endorsement and disclosure on social media, further impacting the way that experts and others share information.⁶⁹

The nutrition community is also embracing a holistic approach, basing more nutrition interventions on the Social Ecological Model (SEM). This systems-based framework recognizes that there are multiple, interacting levels of behavioral influence and that multilevel interventions are more effective for behavior change.⁷⁰

At the community and policy level, progress is being made in creating a culture and environments that support health and wellness. Organizations and public-private partnerships are working creatively across sectors and communities, reaching out to the public to improve population health. Engaging new solutions are inspiring people everywhere they go—from workout routines posted in public parks to comprehensive wellness programs at work.

Health and wellness applications are now one of the fastest growing markets in the technology sector, adding \$267 billion to American health spending.⁷¹

“We envisage a world free of poverty, hunger, disease and want, where all life can thrive...A world with equitable and universal access to quality education at all levels, to health care and social protection, where physical, mental and social well-being are assured. A world where we reaffirm our commitments regarding the human right to safe drinking water and sanitation and where there is improved hygiene; and where food is sufficient, safe, affordable and nutritious.”

–U.N. General Assembly resolution, September 2015

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Use information technology, kitchen technology, business model innovation and insights from social science to enable and support better decision-making and enduring behavior change.

INNOVATIONS IN ACTION:

CONSUMER APPS AND DIGITAL HEALTH PLATFORMS

- In the United States, health IT adoption has a critical consumer engagement component, requiring providers to offer consumers access to their own health data. As a result, the Office of the National Coordinator of Health IT (ONC) has engaged more than 500 organizations and agencies in “Pledge IT,” an initiative to provide consumers with access to their own data so they can be active, engaged partners in their health and care. Pledged community members meet to network, hear updates from the federal government and share best practices with other organizations using technology to support better health and meet the needs defined by individual consumers.
- Blue Button incorporates a patient engagement component into health IT, encouraging patients to access and use their own digital data—and to share it with nutrition professionals. The technology inspires patients to get involved in their own care.
- Self-monitoring apps and websites such as MyFitnessPal and USDA’s SuperTracker are growing in popularity, helping consumers track food and calorie intake. SuperTracker’s online platform allows consumers to track their food intake and physical activity and had more than 5.5 million registered users as of January 2015.⁷² Other apps assist consumers with chronic disease management, such as heart rate and blood sugar monitoring. Tech-powered water bottles such as MyHydrate track water intake.
- Nutrition and health coaching apps and digital nutrition platforms like Zipongo have become available to connect consumers with nutrition counseling through smart phones or websites. Consumers can take pictures of meals and turn in exercise logs for tailored feedback. Zipongo aims to help reduce chronic disease and improve the health of employees and members with personalized meal recommendations based on biometrics and food preferences. It delivers real-time support for healthy food decisions at home, work, grocery stores and restaurants.
- Grocery shopping apps assist consumers in choosing healthy foods at an affordable price. Other food and nutrition apps aid consumers in selecting foods without specific allergens or other ingredients they wish to avoid for medical or cultural reasons.
- Cooking apps aid consumers by making cooking meals at home easier through recipe sharing and grocery list development. More advanced apps such as SideChef offer consumers cooking instructions through voice command.
- Validic is a health care platform that supports access to digital health data from clinical and remote-monitoring devices, sensors, fitness equipment, wearables and patient wellness applications. There are multiple areas for nutrition data access and use by RDNs.

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NEW BUSINESS MODELS

- Meal subscription services such as Blue Apron and Hello Fresh offer consumers recipes with step-by-step instructions as well as doorstep delivery of ingredients for selected meals. And PlateJoy provides recipes that are geared towards personalized nutrition, portion control and food shopping; it's a nutrition and food shopping management system for the family.

KITCHEN TECHNOLOGY

- Companies such as Samsung are envisioning a Smart Kitchen of the Future with appliances designed to make healthy eating and cooking easier for the busy consumer, such as the refrigerator with a camera inside that allows shoppers to view their fridge while standing in the grocery aisle.
- Innit aims to “empower people to eat and live better by giving food a voice.”⁷³ The Innit platform connects smart appliances, can measure and identify food, recommend recipes based on what's on hand and perform cooking techniques through connected appliances. Through the connected

app and using cameras and sensors, the technology that allows consumers to pull up images of the food in their fridge—including the food's expiration dates and nutritional information—is already a reality in Innit's test kitchen. Innit partners include Whirlpool, Good Housekeeping, Kitchenaid and Epicurious, to name a few.

- The Internet of Things, or IoT, refers to the connection of devices (other than typical fare such as computers and smartphones) to the Internet. Cars, kitchen appliances and even heart monitors can all be connected through the IoT. And as the IoT grows in the next few years, more devices will join that list. Analysts predict there will be more than 24 billion IoT devices by 2020 with an anticipated \$6 trillion spent on IoT solutions over the next five years.⁷⁴ That's approximately four devices for every human being on the planet. Hundreds of companies including startups to well-established tech giants are linked to the IoT, including Amazon, AT&T, Dell, GE, Google, IBM, Innit, Intel, Microsoft, Oracle, Samsung, Siemens and Qualcomm, among others.



THOUGHT-STARTER QUESTIONS:

1. How can we use innovative technologies to help consumers navigate misinformation related to food and nutrition shared by traditional and online media outlets?
2. How can we work together to create innovative solutions that address common consumer barriers, such as the cost of eating healthfully and the time it takes to prepare healthy meals?
3. How can experts in the food, wellness and health care space collaborate with industry to help create the “kitchen of the future” that helps people eat better?

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5

Use innovation in urban planning and the built environment to improve health at the community level.

INNOVATIONS IN ACTION:

- An action guide—“Improving Population Health by Working with Communities”—produced by the National Quality Forum (NQF) is helping multisector groups improve population health together by addressing 10 interrelated elements of success.
- Research on zoning and fast food restaurants near schools in England seeks to discover how combined planning measures around schools affect the English food landscape across different levels of deprivation.
- Public Health 3.0 is a public-private government partnership led by the Department of Health and Human Services (HHS) that encourages collaborations across communities and the public. By fostering creativity and innovation across sectors, it aims to make lasting gains in public health across the nation's diverse communities.
- Detroit Collaborative Design Center is working to make local produce—grown by nearly 1,000 urban farmers—more available to communities that need the food. The initiative is creating satellite branches of well-known markets and integrating walking paths and bike lanes throughout southwest Detroit for greater city access. These small but significant design changes promote physical activity and healthy lifestyles for residents.
- 100 Resilient Cities, an initiative of the Rockefeller Foundation, is helping cities around the world become more resilient to the physical, social and economic challenges of the 21st century. The City Resilience Framework is built on four dimensions of urban resilience: health and well-being; economy and society; infrastructure and environment; and leadership and strategy.
- Step It Up! the Surgeon General's Call to Action to Promote Walking and Walkable Communities is a report issued in 2015 that articulates the health benefits of walking while addressing the fact that many communities lack safe and convenient places for individuals to walk or wheelchair roll.⁷⁵
- American College of Sports Medicine (ACSM) is a leader in efforts to increase walking and walkability in the United States through its Every Body Walk! Collaborative, ACSM American Fitness Index, Exercise is Medicine, ActivEarth and other efforts backed by evidence-based research.



THOUGHT-STARTER QUESTIONS:

1. How can we bring together key stakeholders to help accelerate improvements in the built environment to create a culture of health?
2. How can evidence-based research on the connection between health and the built environment be used to inform community development investments?
3. How can we empower communities to prioritize population health in planning and investment decisions?

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Support healthy choices by scaling programs that create a culture of health at worksites, schools and throughout the community.

INNOVATIONS IN ACTION:

SCHOOL AND COMMUNITY INTERVENTIONS

- The Academy Foundation developed the Registered Dietitian Parent Empowerment Program (RD PEP) to enable parents to be healthier role models for themselves, their families and their parent peers. Piloted in 12 schools in three cities, the program provides low-income parents with workshops promoting the 8 Habits of Healthy Children and Families™. The program demonstrated statistically significant improvements in self-reported family behaviors and modified home environments supportive of healthy body mass index (BMI) for children.⁷⁶
- Common Threads and Share Our Strength/Cooking Matters offer after-school cooking classes. These programs give students skills to cook on their own, offering the possibility that students can help other family and household members eat more healthfully and become interested in nutrition.
- The USDA Farm to School program helps operators of child nutrition programs incorporate local foods into the National School Lunch Program. From 2012 to 2015, this program awarded \$15.1 million in grants and during the 2013–2014 school year, more than 42,000 districts brought the farm to the school.⁷⁷
- The Hunger Project promotes community-led development through its Epicenter Strategy that involves one central building that serves as a food bank, clean water source, health center, food processing unit and other community functions.
- Heifer International follows a Values-Based Holistic Community Development model (VBHCD), which focuses on teaching people to “develop the attitudes, behaviors and skills necessary to improve their own lives and transform their communities.”⁷⁸
- CARE International Farmer Field and Business School (FFBS) helps to empower women on the local level by training them to increase smallholder farm productivity and profitability.
- The Concern Worldwide Realizing Agriculture to Improve Nutrition (RAIN) program in Zambia focuses on increasing local understanding of how improved agriculture can improve nutrition.

WORKSITE WELLNESS

- The Centers for Disease Control and Prevention (CDC) has developed the Work@Health employer-based training program to help reduce employee chronic disease and injury while increasing productivity. CDC also has a Worksite Health Score Card to help employers determine if they have implemented science-based health promotion and disease prevention interventions.
- Some employers are particularly active in supporting the health and wellness of their employees. Cliff Bar & Company has an onsite gym and allows 30 minutes per day of paid time for physical activity. Google partners with local farmers to provide all employees

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healthy, free, locally sourced food. Google also has a teaching kitchen where employees can learn to cook and is experimenting with ways to nudge employees toward healthier food choices in its cafeterias. Google holds employee events featuring guest food and nutrition speakers. The Fitbit group health program provided corporate challenges using employer-paid Fitbits.

- Johnson & Johnson Health and Wellness Solutions offers health plans and insurers behavior-science driven Digital Health Coaching tailored for each individual through an upfront assessment focused on depression, sleep, stress and weight.
- Premise Health sets up onsite Health Centers for companies using the

Patient-Centered Medical Home model; they act as the primary care provider for employees. The Health Centers offer a comprehensive range of onsite health and wellness services including dental care, vision care, radiology, chiropractic, acupuncture and health coaching. HealthStat, Marathon Health and others offer similar services.

- Interactive Health is one of dozens of companies that offer health and wellness programs and services to employers, such as screening and health coaching. These programs have reportedly reduced employer medical spending by up to \$1,332 per member per year.⁷⁹



THOUGHT-STARTER QUESTIONS:

1. How can we work together to inspire a “culture of health” approach, including food and nutrition, to improve the health of communities?
2. How can we collaborate to create a replicable gold-standard model and how-to guide for employers to infuse a culture of health into their organizations?
3. How can we translate the benefits of nutrition into educational outcomes to make the case for increased nutrition education in schools and to elevate the importance of school nutrition programs?

PREVENTION AND HEALTH CARE

Focus: *Improve health outcomes and decrease health disparities by accelerating the shift to a preventive health care model and using new technologies to individualize nutrition care.*

Considering the cost of medical treatment, the saying rings truer than ever: An ounce of prevention is worth a pound of cure. Rates of chronic health conditions continue to climb worldwide. The leading cause: malnutrition—in all its forms. An entirely preventable condition.

Around the globe, 800 million people are hungry, 2 billion people are malnourished and 159 million children are stunted. And with 2 billion people who are overweight or obese, countries like India and China are now seeing an alarming increase in diabetes and heart disease.²

The result: diminished human potential and compromised economic growth for entire nations—not to mention the national and individual burden of higher health care costs.

Yet today we see countless reasons for optimism.

Perhaps the most promising change is in new attitudes and awareness. Never before have so many people understood the importance of preventive health care—including the critical role of nutrition. Today, the greater wellness community is acknowledging the critical role of access to food, health care and prevention—and we have strong evidence that investments in improving food access pay off.

A new wave of public policies reflects this shift to prevention and it is transforming our health care system. Today's environment of consumer-directed health care means that patients are consumers first, "with both the freedom and responsibility that come with making more decisions and spending their own money," according to PricewaterhouseCoopers.⁸⁰

Policies and other trends influencing health care delivery are converging, tipping the global health care system towards greater emphasis on primary and secondary preventive care, with a focus on interventions like nutrition and physical activity.

In the United States, the most obvious policy example is the Affordable Care Act (ACA), which requires most health plans to cover recommended preventive services. This includes nutrition counseling for adults at high risk of certain chronic disease and diabetes and obesity screening with referrals for counseling and other preventive screenings and immunizations.^{71,81}

Community Transformation Grants awarded by the CDC—\$103 million in 2011 and more than \$70 million in 2012—helped communities across the nation make lasting changes to reduce health gaps and expand services to prevent and manage chronic diseases.⁸²

Opportunities to improve prevention in health care include using food and diet to treat disease—an approach with the potential for better, lasting health outcomes as well as cost reductions.

Preventive care is increasingly customized, too, grounded in the growing recognition that each patient requires personalized care and a unique treatment plan guided by his or her genetic

Prevention programs could save the U.S. over \$16 billion annually within five years—a return of \$5.60 per dollar invested—according to The Trust for American's Health.⁸³

profile, medical history and lifestyle. Today's patients can choose from a growing menu of individualized treatments and customized nutrition options, and scientific advancements in genetics and the gut microbiome have great potential to advance personalization of nutrition interventions. As we move forward, an even greater emphasis on quality, evidence-based research that demonstrates the benefits of individualized nutrition programs based on these factors and translated to specific dietary recommendations, including medical and functional foods, will be paramount to support this growing industry.

Around the world, models of care delivery are changing and providers are using innovative technologies, information technology and medical nutrition therapies to extend personalized care to patients. One such model—the Patient-Centered Medical Home—is becoming widely adopted across the U.S., Canada and Europe.

Together with the growing use of retail clinics, concierge medicine and the rise of telehealth and mobile health (mhealth), these trends are disrupting the status quo in the health care system. Worldwide, we are replacing our short-term focus on treatment with a view to prevention, especially through diet, physical activity and customized nutrition solutions.

“Whether you are a patient, a provider, a business, a health plan or a taxpayer, it is in our common interest to build a health care system that delivers better care, spends health care dollars more wisely and results in healthier people.”

–HHS Secretary Sylvia Burwell, January 2016
Press Release, “Better, Smarter, Healthier: In historic announcement, HHS sets clear goals and timeline for shifting Medicare reimbursements from volume to value”

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Accelerate the shift in the health care system to emphasize preventive care, especially through an increased focus on diet and physical activity.

INNOVATIONS IN ACTION:

RETAIL CLINICS

- Retail clinics handle 10.5 million visits annually and many now provide basic medical screening, diagnostic and treatment services.⁸⁴ Some are expanding their offerings to include behavioral health screenings, more comprehensive primary care and chronic care management. These clinics are found in pharmacies and grocery stores, such as CVS MinuteClinic and are usually staffed by physician's assistants, nurse practitioners and registered nurses with remote supervision by MDs.
- Rite Aid's RediClinic offers a 10-week comprehensive and medically supervised weight and lifestyle management program, which includes nutrition programs tailored for diabetes.
- Kroger's Little Clinic just launched a pilot project, adding nutrition counseling to their services provided.

DIGITAL HEALTH COACHING

- WebMD and Walgreens have partnered to offer Your Digital Health Advisor, a virtual wellness coaching program powered by WebMD and available on Walgreens.com. This digital program offers the option to access live coaching with health experts if needed.
- Omada, the largest provider of the National Diabetes Prevention program, offers a 16-week online digital health program to help people at risk for chronic disease embrace lasting change. Participants receive a smart scale that automatically syncs their weight to their account. With the guidance of a live coach, they have access to online

support groups, progress through an interactive online curriculum and play games to reinforce their learning with oversight from a live coach.

- Kurbo Health offers an app (with food tracking and games) and online coaching to help treat childhood obesity. The program has gained traction for pilots and deployments with several payers, five large employers and a few Medicaid plans.

INNOVATIONS IN PRIMARY CARE

- Patient-Centered Medical Homes are being adopted more widely across the U.S., due largely to more favorable regulation. The concept is that care and health outcomes are improved by ensuring better handoffs, follow-ups and sharing of patient information between medical professionals, facilitated by new health care information technologies.⁸⁵
- In Cuba, health care is free, universal and guaranteed by the constitution. The World Bank reports that Cuba spends \$431 per person per year compared with \$8,553 in the U.S., but Cuba has a lower infant mortality rate and a similar life expectancy.⁸⁶ Key characteristics of the Cuban model include neighborhood medical centers, compulsory health checks (often done as house calls) and an emphasis on prevention, including vaccinations and addressing key risk factors in lifestyle.
- HealthTap provides its 14,000 users with instant access to a pool of more than 100,000 doctors via secure video or text chat to help avoid unnecessary office visits and provide customized answers to health and wellness questions.⁸⁷



THOUGHT-STARTER QUESTIONS:

1. How can we accelerate the shift to a more proactive, holistic, results-oriented preventive care model that recognizes the importance of nutrition for good health?
2. How might we effectively scale the Nutrition Care Process (assessment, diagnosis, intervention, monitoring and evaluation) globally to prevent and treat malnutrition?
3. How can we take innovative approaches to incentivize entrepreneurship in prevention and population health?

OPPORTUNITY AREA

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Use health care technology, information technology and new medical nutrition therapies to better customize nutrition solutions for individuals.

INNOVATIONS IN ACTION:

GENETICS AND GUT MICROBIOME

- New technologies can identify specific microbes in individuals and categorize them as beneficial, imbalanced (neither pathogenic nor beneficial) or dysbiotic (potential to cause disease). Companies putting these findings to work in both over-the-counter and prescription products include BioGaia, Hansen, Danisco, Danone, Nestle, Probi and Yakult.
- People who have their genes analyzed by 23andMe can upload their results to one of several companies, including NutraHacker, PureGenomics and others for a targeted nutrition recommendation. Genomix Nutrition works through nutrition professionals to offer genetic testing to patients, allowing for more detailed nutrition recommendations.
- Arivale is a direct-to-consumer program that uses data gathered from blood, saliva and genetic and gut microbiome tests to create a personalized program including coaching that is focused on six areas: heart health, diabetes risk, inflammation, optimal nutrition, healthy aging and stress management.
- Newtopia has partnered with Aetna to leverage personalized genetic testing for disease prevention and to lower health care costs for employers. Newtopia identifies “at-risk” employees via genetic tests and then engages them through “Inspirators”—live coaches assigned via a personality-matching algorithm.

INDIVIDUALIZED HEALTH CARE

- Kate Farms creates medical foods and supplements that are free from the top eight allergens, GMO-free, corn-free and are made from all organic ingredients. Their product line includes three flavors of meal replacement shakes that can be consumed normally or through oral and tube feeding.
- The emerging field of microfluidics, often referred to as Lab on a Chip (LOC), allows for point of care (POC) diagnostics and monitoring of acute and chronic diseases through a single drop of blood, sputum or urine. Portable, inexpensive POC devices that accurately detect biomarkers of nutrition, such as micronutrients, can monitor the nutrient content in food and nutritional supplements and have tremendous potential in preventing and treating global malnutrition.
- In the field of cognitive computing, IBM Watson Health is considered the leader, but HP and Dell are working on their own systems.⁸⁸ Among its many capabilities, IBM Watson Health equips experts with new insights to individual and population health to help add confidence to their decision-making and diagnoses.
- Innovate4Health, founded by Sunnie Southern, RDN, is a health innovation ecosystem designed to turn ideas into viable businesses with exposure, mentoring and resources. Southern is the creator of Cleveland-based Viable Synergy, a strategic health care firm dedicated to cultivating innovative

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health care solutions. Southern was invited to the President's Summit on the Precision Medicine Initiative, launched in January 2015.

- The mission of the Precision Medicine Initiative is to enable a new era of medicine through research, technology and policies that empower patients, researchers and providers to work together toward development of individualized care. This is an "all of

government" initiative, which is being led by the Department of Health and Human Services, Department of Veteran Affairs and the Department of Defense. The National Institutes of Health has awarded \$55 million to build a million person precision medicine study.⁸⁹

- Data.gov has a section on its website specific to nutrition. This site powers apps that help people make informed decisions on agriculture, food and nutrition.



THOUGHT-STARTER QUESTIONS:

1. How can we accelerate the development of evidence-based food and nutrition recommendations related to the gut microbiome and nutritional genomics?
2. How can we accelerate progress towards providing universally available care to underserved populations globally via technology and mobile phone?
3. How can we collaborate to accelerate the incorporation of nutrition information into integrated health records and develop an evidence base for the efficacy of food and nutrition solutions in treating disease?

RESEARCH AND STANDARDS

Focus: *Implement models of trusted, public-private collaboration to accelerate high-quality nutrition research, metrics and standards creation and open-access platforms for curating research and reporting outcomes.*

The field of nutrition has rapidly expanded its knowledge base and research contributions over the past several decades. Still, the world's appetite for credible, definitive nutrition data and insights continues to grow.

We have a great untapped opportunity to create positive nutrition outcomes by providing even more trusted, credible food and nutrition data and research—based on standardized modeling and public reporting. Indeed, the 2016 Global Nutrition Report calls for a “data revolution” to accelerate impact on malnutrition.²⁷

Nutrition professionals are ready. The Academy and its registered practitioners created nutrition informatics as a new area of dietetics practice.⁹⁰ The Academy began applying this discipline to nutrition standards and processes over a decade ago and is working with the Healthcare Information and Management Systems Society (HIMSS) to advance the use of nutrition informatics. Our collaboration will go far to advance the fields of health information technology and management systems—and to disseminate evidence-based tools for effective nutrition practice.

The Nutrition Care Process (NCP) is a systematic approach to providing high-quality nutrition care. Use of a care process provides a framework to individualize care, taking into account the patient/client's needs and values and using the best evidence available to make decisions. The Academy led the effort on standardized language development with the Nutrition Care Process Terminology (NCPT), a comprehensive guide for implementing the NCP using a standardized language for nutrition assessment, diagnosis, intervention and monitoring and evaluation.

The Academy is also working to advance data and reporting standards, drawing on its success with standardized nutrition terminology. By adopting a lexicon of standard terms, the Academy's Health Informatics Infrastructure (ANDHII) greatly simplified and standardized the process of data collection and outcome reporting for nutrition practitioners.

There is significant promise—and a substantial prize—for creating quality food and nutrition research that is collaborative, transparent and well-curated. Open-source protocols for modeling within the nutrition community, across sectors and through public-private partnerships will increase credibility, coordination and cooperation. It will also speed curation and dissemination of food and nutrition research.

NCPT has been translated into 11 languages and dialects and is being used or taught in many countries, including Australia, Canada, Denmark, France, Finland, Germany, Greece, Iceland, Israel, Italy, Japan, Korea, Malaysia, Mexico, New Zealand, Norway, Singapore, Sweden, Switzerland, Taiwan and the United Kingdom.

By seizing opportunities to standardize and collaborate on modeling and reporting, the nutrition community will demonstrate its thought leadership, build public trust—and attract funding for further research. Further, a common language and shared ways of measuring impact enable transparent goal setting and tracking for food, wellness and health care companies and other organizations. Together, a shared measurement framework and transparent reporting on progress toward public goals work to hold companies accountable for their commitments and recognize their contributions.

The knowledge we gain and share will bear fruit in effective interventions and better health for people everywhere.

“Accelerating progress against malnutrition will require investment in both proven nutrition interventions and research to understand how to bring promising solutions to scale in a cost-effective manner.”

—Global Nutrition Report 2015: Actions and Accountability to Advance Nutrition & Sustainable Development. Washington, D.C.

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Create standardized models for quality, collaborative, transparent and well-curated food and nutrition research to accelerate our understanding of food's role in health and eliminate all forms of malnutrition.

INNOVATIONS IN ACTION:

- Mission Measurement is using social sector data and insights to connect influential decision makers to evidence-based research for standardizing, measuring and predicting social outcomes.
- The Regan-Udall Foundation, created by the U.S. Congress, is countering the trend of declining government-funded research. This nonprofit organization supports public-private partnership research among industry, academia and FDA scientists to conduct regulatory science research and bring new knowledge into the public domain.
- The Academy's 2015 paper "A Framework for Public-Private Partnerships in Food and Nutrition Research: Implications for Registered Dietitian Nutritionists and the Academy of Nutrition and Dietetics" proposes a framework for public-private partnerships, noting they "have the potential to leverage decreasing research dollars and answer important long-term research questions in nutrition." This framework suggests the food, wellness and health care sectors can have confidence in research findings that come out of these types of partnerships due to the principles that govern the partnership as well as the transparency that the model allows for.⁹¹
- The John Hopkins Global Obesity Prevention Center incorporates a systems approach to bring together multiple stakeholders and researchers to implement strategies to reduce the global burden of obesity and in many projects they are using systems mapping and computer modeling to identify unique key stakeholders to engage.
- Project Laser Beam is a multimillion dollar public-private partnership that combines efforts of multiple stakeholders to address childhood malnutrition, including interventions targeting employee wellness programs, maternal health programs, mobile technology programs to deliver health information and food fortification programs.
- The Academy's collaboration with Healthcare Information and Management Systems Society (HIMSS) is helping advance the fields of health IT and management systems of health informatics—making food and nutrition information more accessible, accurate and meaningful.
- The Global Alliance for Improved Nutrition (GAIN) is an international organization dedicated to ending the cycle of malnutrition and poverty. GAIN partners with organizations such as GlaxoSmithKline, Mars Inc., PepsiCo and Unilever to conduct global health research.
- The International Life Science Institute's Center for Integrated Modeling of Sustainable Agriculture and Nutrition Security (CIMSANS) brings together public- and private-sector scientists to address the challenges of increased global food demand and climate change in a collaborative and sustainable manner.



THOUGHT-STARTER QUESTIONS:

1. How do we create a public-private partnership focused on accelerating research to end hunger, improve nutrition and meet World Health Assembly nutrition target commitments?
2. How can we create a curated, open-access database of food and nutrition research and data to give more practitioners access to the evidence base?
3. How can we establish a standard that supports collaboration and data sharing to accelerate the fight to end malnutrition in all its forms?

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Support continuous progress towards a healthier world by collaborating to create credible reporting standards to publicly track the measurable commitments made by stakeholders.

INNOVATIONS IN ACTION:

- The Food Loss and Waste Accounting and Reporting Standard was developed by a committee representing intergovernmental organizations, the private sector and technology to reduce food loss and waste through transparent reporting. This standardized quantification and reporting system supports food waste policies and initiatives and enables effective tracking of progress towards Target 12.3 of the United Nations Sustainable Development Goals to halve food waste and losses by 2030.
- The Global Nutrition Report tracks the state of the world's nutrition status. The report tracks country-level progress on World Health Assembly nutrition target commitments and recommends actions to accelerate progress.
- Consultative Group on International Agricultural Research (CGIAR) has research partnerships with 15 nonprofit research organizations and specializes in agricultural research to address poverty, hunger, nutrition and the environment. The CGIAR Fund is a multi-donor trust fund administered by the World Bank.
- The Jean Mayer (USDA) Human Nutrition Research Center on Aging (HNRCA) at Tufts University has successful nutrition and disease research partnerships with organizations such as NASA, Ocean Spray and the Almond Board of California.⁹²



THOUGHT-STARTER QUESTIONS:

1. How can we create widely accepted food and nutrition impact metrics?
2. How can we create a single widely accepted system of reporting standards for communicating progress against commitments?
3. How can we accelerate consistent reporting of nutrition impact results by industry to create healthy competition in industry?

GLOBAL WORKFORCE CAPACITY

Focus: Grow the number of trained nutrition professionals and dietitians globally and embed nutrition knowledge broadly to increase nutrition capacity and reach global health goals.

Today more than ever, knowledge is power. More people want to empower healthier lives through nutritional knowledge.

Globally, people are striving to stay well, prevent chronic diseases, avoid obesity—and remain vital well past retirement years as human lifespans increase. Indeed, leaders are recognizing the value of well-nourished citizens as the key to social and political stability and economic growth.

The expertise of nutrition professionals is in great demand around the world—and growing.

Addressing the pressing problems of malnutrition in all its forms will require a highly diverse and skilled global workforce. Investments in strong academic and training programs—particularly in resource-poor countries lacking quality nutrition programs—will pay meaningful, human dividends.

The New Nutrition Workforce Workshop, hosted in 2014 by the United Nations World Food Program, the Institute of Human Nutrition of Columbia University and Sight and Life, aimed to identify the skills and knowledge needed for a workforce prepared to improve nutrition. Many new skills and insights will be required of tomorrow's nutrition professionals. It was recognized that training needs should not only address topics like nutrition, NCDs, food supply and climate change, but expand to include global public health, leadership, systems thinking and advocacy skills.

Training and certificate programs are a good start, but it will be vital for professionals to sustain and advance their skills throughout their careers, with measurable outcomes that demonstrate competency. The Academy's Council on Future Practice (CFP) Change Drivers and Trends Driving the Profession: A Prelude to the Visioning Report 2017 mirrors that forward thinking. The report emphasizes how major societal influences—from the need for training in health equity and prevention-focused models to the growth of technology, genomics research and interprofessional education—will impact the future of the nutrition profession.

“To meet key global nutrition milestones, governments and donors will need to triple their commitments to nutrition over the next decade. We need more spending to build capacity to address obesity, diabetes and other nutrition-related NCDs. And we need to start seeing nutrition investments as a means to economic growth rather than seeing better nutrition as a result of economic growth.”

–Global Nutrition Report 2016

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Expand education, training and credentialing for a workforce that meets global needs of the future.

INNOVATIONS IN ACTION:

- Public Health Institute (PHI) offers a Global Health Fellows Program (GHFP) that aims to improve health and nutrition programs around the world by increasing the pipeline of qualified health professionals for global health careers. PHI offers programs with the CDC, private sector companies and has a \$200 million fellowship program with USAID.⁹³
- African Women in Agriculture Research and Development (AWARD) is a service provider for CGIAR, universities and others to provide tailored fellowships to advance science, technology, innovation capacity and leadership for top women agricultural scientists in Africa. Funders include the Bill and Melinda Gates Foundation and USAID.
- Iowa State University's dietetic internship program offers a four-week service learning opportunity in Ghana where interns receive experience in applying the nutrition care process in rural underserved communities. In a 2016 survey by the Academy to dietetic educators, representatives from 74 schools responded, with 37 schools reporting offering students international nutrition experiences in 26 countries ranging from one week to a full semester (unpublished data, Amy Knoblock-Hahn, PhD, MPH, MS, RDN, Project Specialist, Academy of Nutrition and Dietetics Foundation, email communication, August 2016).
- To better prepare entry-level RDNs to work with food-insecure populations, Feeding America and the Academy's Foundation developed a food insecurity/food banking supervised practice concentration for dietetic interns that includes 120 supervised practice hours and includes 12 activities. The full concentration is available for preceptors to utilize with their interns.⁹⁴
- The Norman E. Borlaug International Agricultural Science and Technology Fellowship Program offers unique food security and economic growth training and research opportunities for practitioners in early or mid-career stages. The fellowship offers one-on-one mentorship between a fellow from a developing or middle-income country with a colleague at a U.S. university, research center or government agency for 6 to 12 weeks.
- The Accreditation Council for Education in Nutrition and Dietetics (ACEND) is the Academy's accrediting agency for education programs preparing students for careers as RDNs or NDTRs. ACEND is the largest accreditor of dietetic programs and accredits 575 nutrition and dietetic programs in the U.S. at the undergraduate or graduate level. ACEND also provides accreditation for nutrition and dietetic programs in five countries.
- The Academy is the largest provider of continuing professional development and lifelong learning for dietitians and nutrition professionals. During the June 1, 2015 – May 31, 2016 program cycle, the Academy provided more than 660 programs via online/self-directed learning equating into more than 1,700 hours of direct program CPEUs (Diane M. Enos, MPH, RDN, FAND, Vice President, Lifelong Learning and Professional Engagement, Academy of Nutrition and Dietetics, email communication, August 2016).



THOUGHT-STARTER QUESTIONS:

- How might we best expand the nutrition professional workforce globally to eliminate malnutrition?
- How can we better align nutrition professional education programs with the changing needs of employers worldwide?
- How can we increase integration of nutrition professionals in the broader landscape of food systems, sustainability and global impact?

OPPORTUNITY AREA

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Embed nutrition knowledge broadly throughout society with education, training and certificates targeting practitioner allies in the food, wellness and health care sectors.

INNOVATIONS IN ACTION:

- The Goldring Center for Culinary Medicine (GCCM) at Tulane University School of Medicine offers a curriculum for doctors, medical students, chefs and community members focused on the significant role that food choice and nutrition play in preventing and managing obesity and associated diseases in America. The program, developed in collaboration with RDs, combines hands-on cooking classes with online course material. With 32 school sites across the country, the program continues to grow rapidly, with growing interest from medical schools around the country.
- The American College of Sports Medicine (ACSM) offers a variety of health and fitness certifications for personal trainers, clinical certifications for exercise physiologists and specialty certifications such as Cancer Exercise Trainer and Physical Activity in Public Health Specialist. More than 20,000 professionals have received an ACSM certification.
- The American Diabetes Association offers a curriculum for key personnel working with children with Type 1 diabetes, geared towards non-medical school employees. The 13-module program includes video segments and PowerPoint presentations and is available free of charge.⁹⁵
- The Edible Schoolyard Project (ESP) was founded by famous chef Alice Waters, who pioneered the concept of school gardens and engaging children in all aspects of growing and “edible education.”
- USDA's Supertracker includes resources for students, including nutrition lesson plans for high school students. The curriculum comes with three lesson plans including resources and handouts.⁹⁶



THOUGHT-STARTER QUESTIONS:

1. How might we expand the workforce fighting malnutrition in all its forms by developing training and/or certificate programs in food and nutrition for a broad variety of professionals?
2. What can we do to collaborate globally to deliver culturally relevant programs in nutrition education?
3. How can we accelerate the development of a culinary medicine concentration in MD programs?

INVESTMENT

Focus: Accelerate progress and explore collaborations to drive investment in nutrition outcomes.

Environmental and social impact investments can transform communities and reverse systemic inequities. And when those investments are focused on food and nutrition, they can fuel a more productive and healthy future for generations to come.

Impact investing enables entrepreneurs and capital markets to join forces for social improvements, while reaping a financial return.⁹⁷ In fact, thought leaders are now predicting that social capital investing may be the next venture capital opportunity in terms of growth capacity.

A report by The Social Impact Investment Taskforce, *The Invisible Heart of Markets—Harnessing the Power of Entrepreneurship and Capital for Public Good*, recognizes these investments may be more effective than donations in helping the poor and in doing good.

We know that the problems society faces today—above all, malnutrition—cannot be solved in isolation by governments or private sectors. The human losses attributed to malnutrition are incalculable. And the lost productivity and health care costs shouldered by the global economy amount to billions of dollars. But those losses are not inevitable. Recently, government agencies in the U.K., U.S., Australia, Canada and Israel—at all levels—have begun exploring the potential of social impact bonds.

In this example of sustainable and responsible investing (SRI), formerly known as socially responsible investing, a government contracts with a private-sector financing entity, which issues bonds to service providers to deliver performance targets. Private investors provide the upfront capital to issue the bond in exchange for a share of the government payments that are made if the performance targets are met.⁹⁸

SRI investing includes environmental, social and corporate governance (ESG) criteria in its investment approach. The goal: deliver positive financial returns and social impacts. Today, even mainstream investment firms have embraced SRI funds because of growing public demand. SRI grew more than 76 percent, increasing from \$3.74 trillion in 2012 to \$6.57 trillion in 2014.⁹⁹ Of the \$36.8 trillion of total assets under professional management in the U.S. (as tracked by Cerulli Associates), 18 percent is involved in SRI —approximately one out of every six dollars.⁹⁹

A growing number of large organizations are incorporating ESG criteria into their Investment Policy Statements and aligning their investments with specific ESG objectives. Nutrition is an exciting opportunity area for impact investment given the strong social benefit from improved nutrition outcomes and nutrition impact could be a new category of ESG metrics.

Every \$1 of investment in nutrition generates a \$16 return in health and economic development.²⁷

Conquering malnutrition will be enormously expensive—but we have the means to turn the tide. The World Bank, Results for Development Institute (R4D) and 1,000 Days, with support from the Bill & Melinda Gates Foundation and the Children's Investment Fund Foundation (CIFF) have collaborated on a detailed cost analysis. They created an investment framework for achieving multiple global nutrition targets.¹⁰⁰ The group's investment framework to reach the global nutrition targets recommends giving priority to a set of the most cost-effective actions, which can immediately be implemented and scaled: an annual investment of just over \$2 billion for the next 10 years.¹⁰⁰

Good data and budget tracking will help focus priorities, ensure accountability and guide smart investment decisions—with an immediate payoff in human lives saved.

“To meet key global nutrition milestones, governments and donors will need to triple their commitments to nutrition over the next decade. We need more spending to build capacity to address obesity, diabetes and other nutrition-related NCDs. And we need to start seeing nutrition investments as a means to economic growth rather than seeing better nutrition as a result of economic growth.”

—Global Nutrition Report 2016

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Catalyze an increase in investment focused on driving improvements and scaling solutions in sustainable food systems, prevention and wellness, health care and building capacity for a global nutrition workforce.

INNOVATIONS IN ACTION:

IMPACT-INFORMED INVESTMENT PRODUCTS

- The Natural Resources Defense Council (NRDC), BlackRock and FTSE Group, the global index provider, have partnered to launch a stock market index to exclude fossil fuel companies for people who want to invest consistent with their values.¹⁰¹ Investment firm BlackRock has stated it will create an investment product that will track the new index series. NRDC has provided seed capital for the BlackRock product.¹⁰²
- Calvert Investments offers mutual funds that invest in socially and environmentally responsible companies with choices such as the Calvert Global Water Fund or the Green Bond Fund.
- HIP Investor offers managed accounts, advice on entire portfolios and wealth management for investors of all types. For example, HIP offers an “Exclusionary 100” portfolio, which selects from the S&P100 companies excluding many fossil energy, chemicals, materials, banking and high-negative-impact firms.

VENTURE CAPITAL-STYLE IMPACT INVESTMENT

- There is a range of for-profit firms doing venture capital-style impact investing with a variety of focus areas. Some examples include Sonen Capital, Encourage Capital and Bridges Ventures.
- There are also nonprofits in this space. For example, Acumen and Omidyar Network both use market-based or entrepreneurial approaches to solve global problems.

IMPACT BONDS

- Government agencies in the U.K., U.S., Australia, Canada and Israel at the national, state and county levels have begun exploring the potential of social impact bonds, a model of social impact investing in which a government contracts with a private-sector financing organization, such as Goldman Sachs, which issues bonds to service providers to deliver performance targets.
- Support Organizations
- The Global Social Impact Steering Group (GSG), established by the Group of Eight (G8), includes 13 countries and the European Union and aims to bring together governments and leaders from finance, business and philanthropy to support the impact investing sector.
- Global Impact Investing Network (GIIN) is nonprofit organization dedicated to scaling and increasing effectiveness of impact investing. GIIN's Investors' Council (with members including J.P. Morgan, Bill and Melinda Gates Foundation, the John D. and Catherine T. MacArthur Foundation, the Rockefeller Foundation, Morgan Stanley and Prudential) provides a forum for leading impact investors to strengthen impact investing practices.
- The Springcreek Foundation report, Promoting Sustainable Food Systems Through Impact Investing, provides a framework to better understand the landscape of current and emerging impact investing opportunities in transforming the food system in the U.S.



THOUGHT-STARTER QUESTIONS:

1. How might we partner with leaders in the sustainable and responsible investing sector to develop infrastructure for nutrition-focused funds?
2. How can we build demand among investors for a sustainable and responsible fund centered on generating a measurable, beneficial nutrition impact in conjunction with a financial return?
3. How can we pool and invest worldwide collective resources to support the investment framework for nutrition in the first 1,000 days of children's lives?

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ABOUT THE ACADEMY

HISTORY

The American Dietetic Association was created in October 1917 by a visionary group of women. They were committed to contributing their knowledge and service to the biggest food and nutrition challenge of the day—nourishing people during severe food shortages in the United States and Europe during World War I. From the handwritten letter by Lenna Francis Cooper and Lulu Graves, inviting dozens of dietitians to a meeting in Cleveland, Ohio, in October 1917:

“That there should be an opportunity for the dietitians of the country to come together in conference and to meet with the scientific research workers has long been felt. Now that our national crisis requires conservation on every hand, it seems highly important that the feeding of as many people as possible be placed in the hands of women who are trained and especially fitted to feed them in the best possible manner.”¹⁰³

Since then, the association has focused on improving the nation’s health through research, education and advocacy. During its first century, membership in the association rapidly expanded to include registered dietitian nutritionists (RDNs), nutrition and dietetic technicians, registered (NDTRs) and other professionals holding undergraduate and advanced degrees in nutrition and dietetics, as well as students.

In January 2012, the American Dietetic Association changed its name to the Academy of Nutrition and Dietetics. The new name was chosen to communicate the organization’s focus on improving the nutritional well-being of the public, the academic expertise of members and the organization’s history as a food and science-based profession.

THE SECOND CENTURY

In 2017, the Academy will celebrate its centennial. Planning for the **Second Century** includes creating a new, bold, vision for the future. The vision will be informed by input from Academy members as well as external stakeholders through a series of engagement opportunities, including convening The Nutrition Impact Summit in 2016. Our mission year—2017—will be focused on planning innovation projects and seeking collaboration partners. In 2018, we will launch our new strategy through a set of innovation projects and new or expanded partnerships.

WORK OF THE ACADEMY

The Academy works to improve health in the United States and globally in three main areas: research, education and advocacy.

RESEARCH

- The most widely read peer-reviewed periodical in the dietetics field, the monthly ***Journal of the Academy of Nutrition and Dietetics***, brings original research, critical reviews and reports, authoritative commentary and information to nutrition and dietetics professionals throughout the world.
- The Academy manages the **Evidence Analysis Library (EAL)**, including a series of 40 systematic reviews and 18 evidence-based nutrition practice guidelines for RDNs, NDTRs and other members of the health care team. Users from 230 different countries have utilized the EAL, totaling nearly 23 million page views as of August 2016. (See the [Appendix](#) for a list of areas covered by the EAL.)
 - The Academy has also collaborated with the WHO on EAL projects, including completing a systematic review on programs that support breast-feeding in woman living with HIV—part of soon-to-be released guidelines on HIV and breast-feeding.
 - Upcoming projects with the WHO include:
 - Nutritional management of overweight, obesity and key noncommunicable conditions;
 - The impact of sugar in complementary foods on obesity in children and adults;
 - Maternal nutrition and fetal, child and trans-generational outcomes.
- The **Academy of Nutrition and Dietetics Health Informatics Infrastructure (ANDHII)** enables RDNs to track nutrition care outcomes and advance evidence-based nutrition practice research.
- The **Dietetics Practice Based Research Network (DPBRN)** conducts, supports, promotes and advocates for practice-based research that answers questions important to dietetics practice.

EDUCATION

- The Academy's public website, eatright.org, contains a wealth of nutrition information for consumers, with content ranging from articles, tips and recipes, to videos, online games and app reviews.
- The Accreditation Council for Education in Nutrition and Dietetics (ACEND) of the Academy is recognized by the United States Department of Education as the accrediting agency for education programs that prepare dietetics professionals. ACEND accredits 575 nutrition and dietetics programs in US and five international programs. (See the [Appendix](#) for details on requirements for registered professionals.)
- The Commission on Dietetic Registration (CDR) awards credentials to individuals at entry and specialty levels for those who have met CDR's standards for competency to practice in the dietetics profession. (See the [Appendix](#) for more information on practice groups and specialty areas.)
- The annual Food & Nutrition Conference & Expo™ (FNCE®) features more than 100 research and educational presentations, lectures, debates, panel discussions and culinary demonstrations. More than 400 exhibitors from corporations, government and nonprofit agencies showcase new consumer food products and nutrition education materials.
- The Academy serves as an authority and resource for media coverage of nutrition topics, with the Academy featured in more than 22,000 news stories with a combined audience

of more than 29 billion. The Academy's volunteer media spokespeople are registered dietitian nutritionists representing the 25 largest media markets as well as specialty nutrition areas.

ADVOCACY

- The Academy works with public policy makers and federal and state agencies on policy issues aligning with the Academy's goals to improve health and promote the value of Academy members. Some of these include expanding nutrition services and interventions in the recently passed Farm Bill and Older Americans Act and ensuring strong legislative language in the Child Nutrition Reauthorization Act now being debated.
- Ensuring access to quality nutrition services including medical nutrition therapy (MNT) is a top priority for the Academy as we work with members of Congress to help move forward and ensure the passage of legislation that expands coverage for prediabetes and obesity. The Academy works with agencies to ensure effective regulations are developed including the areas of food safety, the Dietary Guidelines for Americans (DGA) and strong licensure language to protect the public.
- To help support these issues, the Academy publishes Position Papers to share with members and policy makers. Please see the [Appendix](#) for a list of position papers or view them online at <http://www.eatrightpro.org/resource/practice/position-and-practice-papers/position-papers/academy-position-papers-by-subject>.

ACADEMY FOUNDATION

The Academy of Nutrition and Dietetics Foundation is the only charitable organization devoted exclusively to promoting nutrition and dietetics, funding health and nutrition research and improving the health of communities through public nutrition education programs. Although affiliated with the Academy of Nutrition and Dietetics, the Foundation is an independent 501(c)(3) public charity and does not receive any portion of member dues. The success and impact of its programs and services are attributed to the generous support of its donors, which have helped the Foundation become a catalyst for Academy members and the profession to come together to improve the nutritional health of the public.

The Second Century initiative will build upon the Academy and Foundation's programs, with emerging projects and global opportunities to meet the growing needs of the public. As the Academy charts its Second Century vision for the future, the Academy Foundation is well positioned to raise the necessary funds to support these innovative projects, along with the current initiatives of the Foundation—scholarships, awards, research and public education—in a broader, more visible and global way.

Scholarships

The Foundation is the worldwide leader of dietetics scholarships, and looks to keep pace with a growing pool of student applicants, providing opportunities at all levels of experiential learning and helping to build a qualified and diverse workforce.

Awards

Leadership awards given to students, practitioners and faculty recognize the outstanding achievements of Academy members, encouraging individuals to grow as professionals and achieve excellence in new and developing areas of food and nutrition.

Research

The Foundation's research investment in emerging areas, such as nutrition education intervention, advances the Academy and its members as the nutrition experts.

Public Education

Building upon its current initiatives, the Foundation continues to expand its programs, such as Kids Eat Right and Future of Food, which provide valuable information to the general public with resources for members to deliver information in their communities.

Kids Eat Right Initiative

The **Kids Eat Right** initiative was started by the Academy and its Foundation in 2010 with an educational grant from National Dairy Council. The initiative is a call to action to Academy members to become more involved in their communities—with schools, parents, worksites, media and policy makers to promote healthy eating and lifestyles for children and families. To support these efforts, the Academy Foundation has made available to members several ready-made toolkits to present messages to adults and/or kids on a variety of topics, including breakfast, snacks, family meals and many more. The www.kidseatright.org public website hosts tips, articles, recipes and videos to help busy families shop smart, cook healthy and eat right. The Kids Eat Right initiative has also launched a host of school and community-based interventions targeting behaviors linked to a healthier body weight in children.

The **Energy Balance 4 Kids** (EB4K) program was developed, implemented and evaluated in four states between 2007–2012 with funding support from the Healthy Weight Commitment Foundation. Specially-trained “RD Coaches” worked in schools to educate kids, help improve the school wellness environment and coach kids to make healthier eating and activity choices.^{104,105} A build on that program was the development of the **Meet the Challenge program**, funded by the Iowa Department of Education, Team Nutrition, which has been implemented in Iowa for five years. Foundation-trained and supported RDNs have worked with more than 100 schools across the state to help change wellness policies, improve school wellness environments and help many of them receive a prestigious monetary USDA HealthierUS School Challenge award.

The **RD Parent Empowerment Program** (RD PEP) is a series of RDN-facilitated workshops for parents based on the 8 Habits of Healthy Kids. The workshops incorporate hands-on cooking activities with parents and their children at the end of each workshop, and in some interventions, include supplemental food to take home. Evaluation of the program has shown statistically significant improvement in parent's reported family behaviors.⁷⁶ It is an excellent example of how pairing education and improved environment (in this case, healthy groceries) can improve family behaviors and improve food security. The Foundation received an educational grant to support for program development, implementation and evaluation from the MetLife Foundation and Elanco.

The **Guide for Effective Nutrition Interventions and Education** (GENIE) is a validated checklist designed as a simple, practical and evidence-based tool to help nutrition education practitioners design high quality and effective programs.^{106,107} GENIE was developed through a Nutrition Education Research Fellowship, funded by a grant to the Foundation from ConAgra Foods Foundation. The Foundation has also validated a checklist tool, **Developing and Evaluating Nutrition Education Handouts** (DANEH).¹⁰⁸

Future of Food initiative

In 2012, the Foundation launched its **Future of Food** initiative in collaboration with Feeding America and the National Dairy Council. Its aim was to reduce food insecurity and ensure access to healthy food for all Americans. Its scope has expanded to also address global food insecurity and the intersection of agriculture, nutrition and health. Many presentations at state meetings, webinars, toolkits and infographics have been supported by the Foundation to increase members' knowledge and awareness of these issues. The Foundation supported an Agriculture, Nutrition, and Health consensus conference in 2014 and a proceedings paper was published in 2015.¹⁰⁹ The Future of Food symposium, **Plentiful, Nutrient Dense Food for the World: a Guide for RDNs**¹¹⁰ was a Foundation Symposium in 2014 planned with a grant from Elanco. The Foundation also published a report and manuscript called *The State of America's Wasted Food and Opportunities to Make a Difference*.¹¹¹

To better prepare future RDNs interested in working with food insecure populations, the Foundation developed a **Food Insecurity and Food Banking dietetic internship concentration**.⁹⁴ In collaboration with ACEND and Feeding America, 120 hours of learning activities were developed and tested with in 20 dietetic internship programs and with 20 food banks. The concentration and activities are available to dietetic educators to utilize in their programs.

The Foundation has been an evaluation partner for Feeding America on their **Healthy Cities** program, an intervention designed to integrate food distribution, nutrition education, health screenings and safe places to play for kids in several communities across the country. The Foundation has also evaluated school breakfast promotion strategies by food banks in the Feeding America Network of food banks in the U.S.¹¹²

Three Future of Food research Fellowships have been supported by the Academy Foundation:

- Chris Vogliano, MS, RDN: Agriculture, Nutrition, and Health Research Fellow
 - Organized the Agriculture, Nutrition and Health consensus conference; developed proceedings paper for a FNCE Symposium; co-authored the *State of America's Wasted Food and Opportunities to Make a Difference*
 - This fellowship was supported by the Academy Foundation
- Janice Giddens, MS, RDN: Applied International Nutrition Research Fellow
 - Spending a year on the ground in Rwanda developing and implementing an antenatal nutrition and gardening program with Gardens for Health International; also serves as the nutrition technical expert to the Ministry of Health in two of the districts she's working in
 - This fellowship was supported by the Academy Foundation
- Elizabeth Yakes Jimenez, PhD, RDN: Hunger Free Communities Research Fellow
 - Developing a globally useful set of resources and tools that will allow organizations, communities, and countries to make *transparent* and *objective decisions* related to how to best promote food security in their setting; fellowship was supported by the General Mills Foundation

In 2015, the Academy and Foundation hosted a **Global Nutrition Forum** in Amsterdam, which brought together more than two dozen dietitians and food and nutrition experts from around the world to discuss how the nutrition community can do more to collectively impact malnutrition.

6

APPENDIX

BACKGROUND ON THE ACADEMY AND THE NUTRITION PROFESSION:

- REQUIREMENTS FOR REGISTRATION AS A REGISTERED DIETITIAN NUTRITIONIST (RDN) AND NUTRITION AND DIETETIC TECHNICIAN, REGISTERED (NDTR)
- DIETETIC PRACTICE GROUPS AND SPECIALIST CREDENTIALS
- THE ACADEMY OF NUTRITION AND DIETETICS EVIDENCE ANALYSIS LIBRARY
- ACADEMY OF NUTRITION AND DIETETICS POSITION PAPERS

DEFINITION OF TERMS

SOURCES

REQUIREMENTS FOR REGISTRATION AS A REGISTERED DIETITIAN NUTRITIONIST (RDN) AND NUTRITION AND DIETETIC TECHNICIAN, REGISTERED (NDTR)

The Academy of Nutrition and Dietetics serves as the professional organization for registered nutrition professionals. The Accreditation Council for Education in Nutrition and Dietetics (ACEND) is the accrediting agency for education programs preparing students for these careers. ACEND® serves and protects students and the public by assuring the quality and continued improvement of nutrition and dietetics education programs. The Commission on Dietetic Registration (CDR) administers rigorous, valid and reliable credentialing processes to protect the public and meet the needs of CDR credentialed practitioners, employers and consumers.

	RDN	NDTR
Academic Degree	Minimum of a baccalaureate degree from a U.S. regionally-accredited college/university or foreign equivalent	Minimum of an associate's degree from a U.S. regionally-accredited college/university or foreign equivalent
Academic Coursework	Didactic Program in Dietetics (DPD) from ACEND-accredited DPD Program	Option 1 Associate Degree Pathway: Completion of an ACEND-accredited Dietetic Technician Program. Option 2 Baccalaureate Degree Pathway: Completion of an ACEND-accredited Didactic Program Dietetics (DPD)
Supervised Practice	Completion of the minimum 1200 hours of supervised practice under the auspices of an ACEND-accredited program.	Option 1 Associate Degree Pathway: Completion of 450 hours of supervised dietetics practice under the auspices of an ACEND-accredited Dietetic Technician Program Option 2 Baccalaureate Degree Pathway: No supervised practice requirement
Examination	Supervised practice may be completed in diverse practice settings including but not limited to clinical and hospital, foodservice management, community practice settings	Successful completion of Registration Examination for Dietetic Technicians
Credential Maintenance	Successful completion of Registration Examination for Dietitians 75 continuing professional education units every five years	50 continuing professional education units every five years

Based on recommendations of the Academy's CFP Visioning report, CDR has changed the degree requirement for entry-level dietitians to a graduate degree, beginning in 2024.¹¹³

DIETETIC PRACTICE GROUPS (DPGS) AND SPECIALIST CREDENTIALS

The Academy of Nutrition and Dietetics offers members the opportunity to join nearly 30 professional interest groups, called dietetic practice groups (DPGs), spanning behavioral health, diabetes care, weight management, school nutrition, food and culinary, business and communication, sports nutrition and hunger and environment, among many others.

CDR offers an Advanced Practice in Clinical Nutrition credential as well as five specialist credentials: Certified Specialist in Pediatric Nutrition, Renal Nutrition, Gerontological Nutrition, Oncology Nutrition and Sports Dietetics. A sixth specialist certification, Interdisciplinary Specialist in Obesity and Weight Management, is in development. The first administration is targeted for early 2017.

EVIDENCE ANALYSIS LIBRARY

Below is a list of topics covered by the Academy of Nutrition and Dietetics' Evidence Analysis Library (EAL), a synthesis of the best, most relevant nutritional research on important dietetic practice questions housed within an accessible, online, user-friendly website. For each project topic, the EAL provides a number of resources, including:

- **Bibliographies** of the highest quality research on a given topic
- **Conclusion Statements** that provide concise statements of the collective research on a given question
- **Grades** for each Conclusion Statement that provide a way for practitioners to determine how certain we can be of the Conclusion Statement, based on the quality and extensiveness of the supporting evidence
- **Evidence Summaries** are brief narrative overviews that synthesize the major research findings on a given topic, including overview tables
- **Worksheets** on every research study analyzed that provide detailed information on the major findings, methodology and quality of each study.

Projects that continue on to guideline development include:

- **Recommendations** which provide a plan of action for practitioners regarding a specific disease
- **Recommendation Strength and Narrative** for each recommendation is graded by strength with a narrative describing how the strength was derived
- **Algorithms** which are a simple step-by-step procedure for using the recommendations, showing the flow of treatment for a disease or condition
- **Guidelines** published after June 2014 will no longer include algorithms since the evidence analysis questions are now organized by Nutrition Care Process category
 - **Links to Evidence** for each recommendation link back to the evidence where you can track backwards to see the conclusion statement, evidence summaries and individual article worksheets

Adult Weight Management
Advanced Technology in Food Production
Athletic Performance
Bariatric Surgery
Breast-feeding
Celiac Disease
Chronic Kidney Disease
Chronic Obstructive Pulmonary Disease
Critical Illness
Diabetes Type 1 and 2
Diabetes (Type 2) Prevention
Dietary Fatty Acids
Disorders of Lipid Metabolism
Energy Expenditure
Fiber
Fluoride
Food and Nutrition for Older Adults
Fruit Juice
Gestational Diabetes
Health Disparities
Heart Failure
HIV/AIDS

Hydration
Hypertension
Medical Nutrition Therapy
Microwave and Home Food Safety
Nutrient Supplementation
Nutrition Counseling
Nutrition Guidance in Healthy Children
Nutrition Screening
Nutritive and Non-Nutritive Sweetener
Obesity, Reproduction and Pregnancy
Oncology
Pediatric Weight Management
Single Serving Portion Sized Meals and Weight Management
Sodium
Spinal Cord Injury
Telenutrition
Umami
Unintended Weight Loss in Older Adults
Vegetarian Nutrition
Wound Care

ACADEMY POSITION PAPERS

The Academy of Nutrition and Dietetics develops position papers to assist in promoting the public's optimal nutrition, health and well-being in areas germane to the Academy's vision, mission, values, goals and strategies. The Academy also participates in developing joint position papers with other professional associations in addition to adopting positions put forth by other professional associations. Position papers are written by health professionals who possess thorough and current knowledge of the topic.

Food, Nutrients and Ingredients

- [Functional Foods](#)
- [Nutrient Supplementation](#)
- [Use of Nutritive and Nonnutritive Sweeteners](#)

Management of Food and Nutrition Systems

- [Benchmarks for Nutrition in Child Care](#)
- [Child and Adolescent Nutrition Assistance Programs](#)
- [Comprehensive School Nutrition Services](#), a joint position of the American Dietetic Association, School Nutrition Association and Society for Nutrition Education
- [Local Support for Nutrition Integrity in Schools](#)

Health Promotion/Disease Prevention

- [Dietary Fatty Acids for Healthy Adults](#)
- [Health Implications of Dietary Fiber](#)
- [The Impact of Fluoride on Health](#)
- [Oral Health and Nutrition*](#)
- [The Role of Nutrition in Health Promotion and Chronic Disease Prevention*](#)
- [Total Diet Approach to Healthy Eating](#)
- [Vegetarian Diets](#)

Medical Nutrition Therapy

- [Ethical and Legal Issues in Nutrition, Hydration and Feeding*](#)
- [Integration of Medical Nutrition Therapy and Pharmacotherapy](#)
- [Interventions for the Prevention and Treatment of Pediatric Overweight and Obesity](#)
- [Interventions for the Treatment of Overweight and Obesity in Adults](#)
- [Nutritional Genomics](#)
- [Nutrition Intervention and Human Immunodeficiency Virus Infection](#)

- [Nutrition Intervention in the Treatment of Eating Disorders*](#)
- [Nutrition Services for Individuals with Intellectual and Developmental Disabilities and Special Health Care Needs](#)

Nutrition and Physical Activity

- [Nutrition and Athletic Performance](#)

Nutrition Through the Lifecycle

- [Food and Nutrition Programs for Community-Residing Older Adults, a joint position of the American Dietetic Association, American Society for Nutrition and Society for Nutrition Education](#)
- [Food and Nutrition for Older Adults: Promoting Health and Wellness](#)
- [Individualized Nutrition Approaches for Older Adults in Health Care Communities*](#)
- [Nutrition and Lifestyle for a Healthy Pregnancy Outcome*](#)
- [Nutrition Guidance for Healthy Children Ages 2 to 11 Years](#)
- [Obesity, Reproduction and Pregnancy Outcomes](#)
- [Promoting and Supporting Breastfeeding*](#)

Management of Sustainable, Resilient and Healthy Food and Water Systems

- [Food and Water Safety](#)
- [Food Insecurity in the United States](#)
- [Nutrition Security in Developing Nations: Sustainable Food, Water and Health](#)

**Indicates Practice Paper has been published on the same topic*

Position Papers by Other Associations Adopted by the Academy

Partnership for Health in Aging (PHA)

- [Partnership for Health in Aging Position Statement](#)
- [Interdisciplinary Team Training in Geriatrics: An Essential Component of Quality Healthcare for Older Adults](#) (Abstract from Academy)

American Society of Parenteral and Enteral Nutrition (ASPEN)

- Parenteral Nutrition Glutamine Supplementation [Abstract](#) | [Position Paper](#)
- Clinical Role for Alternative Intravenous Fat Emulsions [Abstract](#) | [Position Paper](#)

DEFINITIONS AND TERMINOLOGY

Alternative food network – New and rapidly mainstreaming spaces in the food economy defined by, among other things, the explosion of organic, Fair Trade and local, quality and premium specialty foods.

Aquaponics – A combination of fish and plant production using aquaculture and hydroponics systems.

Bio-fortification – The process by which the nutritional quality of food crops is improved through agronomic practices, conventional plant breeding or modern biotechnology. Bio-fortification differs from conventional fortification in that bio-fortification aims to increase nutrient levels in crops during plant growth rather than through manual means during processing of the crops.

BMI – Also known as the Body Mass Index or Quetelet Index, it's a value derived by taking a person's weight in kilograms (kg) divided by his or her height in meters squared. The National Institutes of Health (NIH) now defines normal weight, overweight and obesity according to BMI rather than the traditional height/weight charts.

Cognitive computing – The stimulation of human thought processes in a computerized model. It involves self-learning systems that use data mining, pattern recognition and natural language processing to mimic the way the human brain works.

Co-product utilization – The use of jointly manufactured products in a process in which both are required in the creation of another product.

DALYs – Disability Adjusted Life Years (DALYs) are the sum of years of potential life lost due to premature mortality and the years of productive life lost due to disability.

Food deserts – Areas where residents live a mile or more from where they can purchase healthy, affordable food. Per USDA, more than 20 percent of the population falls

below the poverty level and at least 33 percent of the population lives more than a mile from a grocery store.

Food genetics – Genetically modified (GM) foods are derived from organisms whose genetic material (DNA) has been modified in a way that does not occur naturally or at a rate that is faster than traditional cross-breeding practices.

Food loss – Food that is lost before it reaches the retail, restaurant or consumer outlet. This usually occurs because of poor infrastructure, storage, refrigeration, labor and transportation issues.

Food waste – Any food that is discarded along the food supply chain. Food waste takes place in grocery stores, restaurants, foodservice operations and homes.

Fortification – The practice of deliberately increasing the content of an essential micronutrient, i.e. vitamins and minerals (including trace elements) in a food, to improve the nutritional quality of the food supply and provide a public health benefit with minimal risk to health.

Functional foods – Defined as whole foods along with fortified, enriched or enhanced foods that have a potentially beneficial effect on health when consumed as a part of a varied diet on a regular basis at effective levels.

GMO – Organisms (i.e. plants, animals or microorganisms) in which the genetic material (DNA) has been altered in a way that does not occur naturally by mating and/or natural recombination.

Greenhouse gas – A gas that absorbs and emits radiation within the thermal infrared range. The primary greenhouse gases in Earth's atmosphere are water vapor (H₂O), carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O) and ozone (O₃).

Gut microbiome – The collective of microorganisms that reside in the digestive tracts of humans and other animals.

Hydroponic – The process of growing plants in a nutrient solution root medium.

Malnutrition – Deficiencies, excesses or imbalances in a person's intake of energy and/or nutrients. The term malnutrition covers two broad groups of conditions. One is undernutrition, which can cause stunting (low height for age), wasting (low weight for height), underweight (low weight for age) and micronutrient deficiencies or insufficiencies (a lack of important vitamins and minerals). The other is overweight, which can cause obesity and diet-related non-communicable diseases (such as heart disease, stroke, diabetes and cancer).

Medical foods – Foods formulated to be consumed under the supervision of a physician. They are prescribed for the specific dietary management of a disease or condition for which distinctive nutritional requirements, based on recognized scientific principles, are established by medical evaluation.

Medical nutrition therapy (MNT) – An individualized dietary instruction that incorporates diet therapy counseling for a nutrition-related problem. This level of specialized instruction is above basic nutrition counseling and includes an individualized dietary assessment.

Methane – A colorless, odorless gas with a wide distribution in nature, comprised of CH₄, ethane and other hydrocarbons.

Micronutrients – Vitamins and minerals required in small quantities to ensure normal metabolism, growth and physical well-being.

Mobile health – The term used to describe the practice of medicine and public health supported by mobile devices.

Non-communicable disease – Chronic conditions that are not transmitted from person to person and are generally slow to progress. Four main types of non-communicable diseases are diabetes, chronic respiratory diseases, cardiovascular diseases and cancers.

Nutritional genomics – Also known as nutrigenomics, this is the study of how foods affect our genes and how individual genetic differences can affect the way our bodies respond to nutrients in food.

Obesity – Body weight higher than what is considered healthy for a certain height. A Body Mass Index (BMI) greater than 30 is in the obese range.

Public-private partnership – Also known as a PPP or P3, is a contractual arrangement between a public agency and a private sector entity. Through this agreement, their skills and assets are shared to provide a service or facility for public general use.

Scale/scaling – To grow or expand a program or project to create a broader impact. Often has the connotation of taking advantage of economies of scale where expansion of impact can be achieved without a proportionate increase in costs. May also refer to taking a small pilot or test project and implementing it across a broader geography or population.

Smallholders – Small-scale farms, pastoralists, forest keepers and fishers who manage areas

of land varying from less than one hectare to 10 hectares. They are the primary producers of cocoa, coffee and cotton.

Spectrometry – The measurement of electromagnetic radiation as a means of obtaining information about physical systems and their components.

Telehealth – Includes a broad variety of technologies and tactics to deliver virtual medical, health and education. Telehealth is not a specific service, but a collection of ways to enhance care and education delivery.

Vertical farming – An urban food production center where food is continuously grown inside tall buildings.

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