



Next-Generation Solutions to Address Adaptive Challenges in Dietetics Practice: The I+PSE Conceptual Framework for Action

OBESITY, DIABETES, AND heart disease; health care expenditures; food insecurity and hunger; climate change; food waste; reimbursement rates for dietetics services; nutrition research funding; and, most recently, the unprecedented coronavirus disease 2019 (COVID-19) pandemic. These complex problems or “adaptive challenges” are commonplace for registered dietitian nutritionists (RDNs). An adaptive challenge is a complex situation without known solutions to the problem or too many solutions without clear choices.¹ The COVID-19 pandemic has introduced unprecedented tribulations to public health, health care, and food-supply chains, and has disrupted dietetics practice, settings in which RDNs work, and the individuals and populations RDNs serve. In the face of adversity, RDNs need to reflect and ask, “Is what I am doing making a difference?” “Are there other evidence-based tools I should use?” “Who can I partner with to advance my work?” and “What can I do differently to help achieve the goals for the individuals and communities I serve?”

Although many of these issues are not new, the approaches to addressing these issues are perhaps new territory for RDNs. Adaptive challenges require new learning and new behaviors for

RDNs to be better prepared and to more effectively respond to emergent, complex problems. It also requires RDNs to embrace systems thinking, that is, to dig deep and uncover the root causes of the adaptive challenge, to partner with others, to be innovative and design coordinated actions, take calculated risks, and invest the time needed to shift the trajectory of complex problems.¹ This article describes the Individual plus Policy, System, and Environmental (I+PSE) Conceptual Framework for Action (known as the “Framework”) as a roadmap for RDNs across all areas of practice (eg, research, education, clinical, community, and management) to better address adaptive challenges and to formulate multidimensional strategies for optimal impact. The Framework has cross-cutting practice implications for all areas of dietetics practice and can lead to the next generation of solutions to tackle adaptive challenges that better support nutrition and health.

I+PSE CONCEPTUAL FRAMEWORK FOR ACTION

The I+PSE Conceptual Framework for Action in [Figure 1](#) is a blueprint for RDNs and their partners to develop and implement multidimensional strategies using a systems orientation to achieve greater responsiveness to adaptive challenges and realize greater impacts.¹⁻⁷ Once an adaptive challenge is identified, RDNs can apply a determinants of health lens ([Figure 1](#), phase 1) to closely examine nutrition and health problems and better identify why problems are worsening despite best efforts to solve them. The result of this focused assessment is a stronger diagnosis of the root causes that supports strategic decision-making^{1,2} in phase 2. Phase 2 is the formation of coordinated multidimensional strategies that produce a

sustainable and synergistic effect. Phase 3 is the evaluation of outcomes and impacts of the suite of strategies and the degree to which change has occurred at the individual, practice, program, organizational, policy, and population levels.³⁻⁵ Encircling the Framework is systems thinking and reflection to support an iterative cycle of robust assessment, planning, implementation, and impact evaluation. The Framework is versatile and can be adapted to a wide range of nutrition issues, areas of dietetics practice, and diverse partnerships.

PHASE 1: ASSESS DETERMINANTS OF HEALTH

The first step in addressing an adaptive challenge is to assemble all relevant qualitative and quantitative information and answer the questions “What does the evidence tell us?” “Where are the gaps?” and “How does this impact the nutrition and health of the individuals or communities we serve?” To inspire a broad examination of contextual influences on health and support root cause analyses,¹ RDNs and their partners are encouraged to use a determinants of health lens ([Figure 1](#), phase 1). This phase includes 3 categories of information—social, commercial, and political—that have demonstrated influence on the nutritional health of individuals and populations.

Social Determinants of Health

Strong evidence supports that where individuals live, work, learn, and play is associated with health risks, well-being, and lifespan.⁸ Social Determinants of Health (SDOHs) are the interconnections between social, physical, and economic characteristics and how they influence health status at

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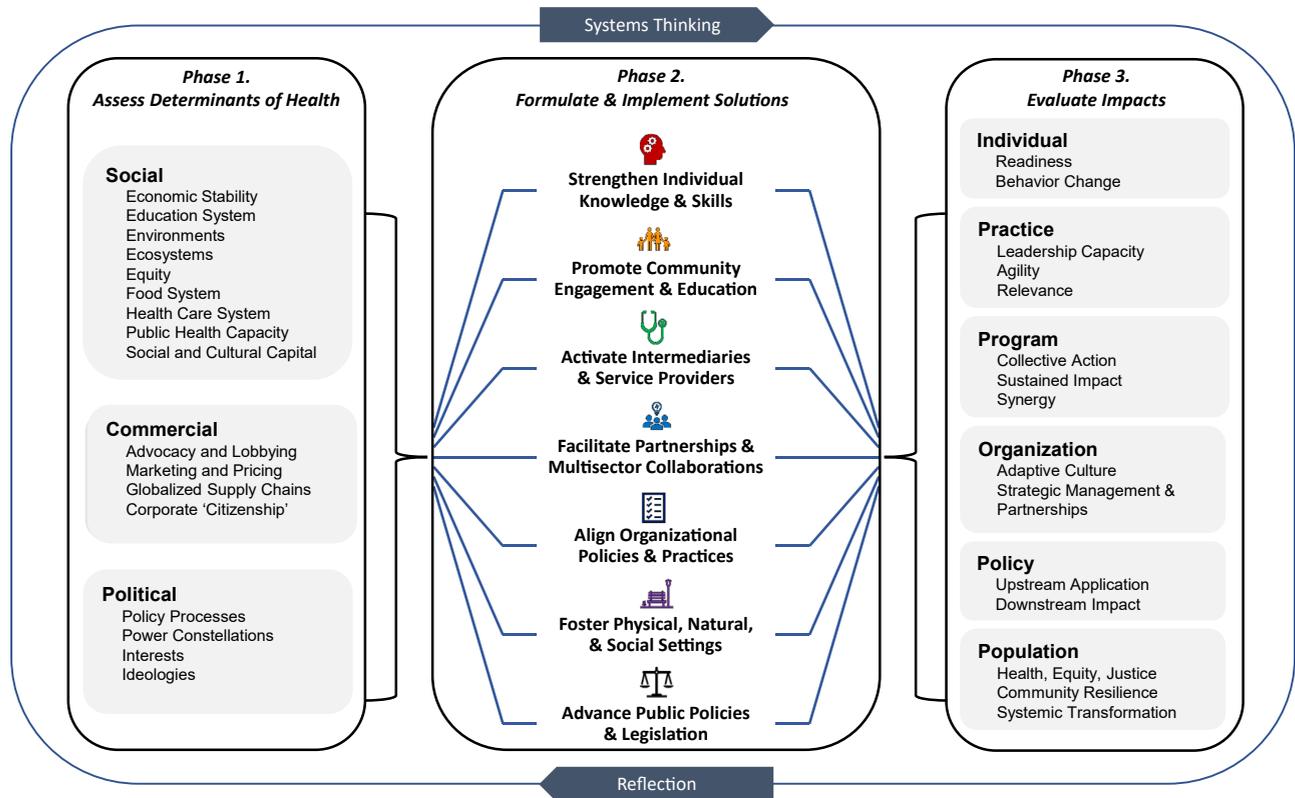


Figure 1. Individual Plus Policy System and Environmental (I+PSE) Conceptual Framework for Action

a community or population level.^{9,10} An SDOH approach examines disparities and serves as the catalyst for a root cause matrix to identify nutrition and health inequities.¹⁰ The SDOH assessment includes economic, education, social and cultural, health, neighborhood, and built environment information.¹¹ However, in the context of nutrition and health, the dimensions of food systems, natural environments and ecosystems, and public health capacity need to be considered. Greater awareness of these linkages within a nutrition context drives informed solutions that advance healthy choices as the default choices.¹²

Commercial Determinants of Health

The rise of diet-related chronic diseases as an adaptive challenge is regarded as a symptom of a global culture in which profits are prioritized over health.¹³⁻¹⁵ Commercial determinants of health are described as tactics used by the private sector to market products and services that sway consumer decisions that can impact their health,¹⁴⁻¹⁶ while

simultaneously driving profits.¹⁶ Specifically, corporations influence markets, policies, physical landscapes and environments, and consumer behavior by using strategic marketing of palatable, yet often unhealthy foods and beverages.^{15,16} Corporations lobby policymakers and are often an invisible influence on public policy.^{15,16} Furthermore, corporations grow global supply chains, which increases market control and they can mislead consumers using disingenuous “citizenship” and social responsibility efforts, including health and environmental claims.¹⁴⁻¹⁶ When combined, these strategies alter social values and norms that are often counter to healthy behaviors.^{17,18} In 2017, almost US\$14 billion was spent on marketing food and beverages in the United States, with more than 80% of the advertising promoting fast food, sugar-sweetened beverages, candy, and unhealthy snacks.¹⁹ Food and beverage marketing has shifted from traditional print and television formats to digital platforms. A recent study found that half of online food and beverage promotions were for unhealthy products.²⁰ Although corporate behaviors

and their influence on nutrition and health are not always transparent, failure to acknowledge commercial determinants of health will result in gaps in the determinants of health assessment, in addition to missed opportunities for RDNs and their partners to change dominant narratives.¹⁶

Political Determinants of Health

Many agree that the underlying stimuli to SDOHs are corporate and political influences.²¹⁻²³ Public policy and politics play significant roles in all areas of dietetics practice. This includes, but is not limited to, the Dietary Guidelines for Americans, food and nutrition assistance programs, food safety, food security, food labeling, consumer education, dietetics education, reimbursement for nutrition services, and licensure of RDNs. Political determinants of health are defined as how various power constellations, institutions, interests, and ideologic platforms affect health within political systems and levels of governance.²² When conducting a determinants of health assessment, RDNs and their

| I+PSE component | HEAL definition ^b | Example strategies |
|--|---|--|
| Strengthen Individual Knowledge and Behavior | Enhance individual, or household’s decision-making and capability of participating in or benefitting from HEAL | <p>Use US Department of Agriculture’s <i>MyPlate</i>²⁹ resources to promote fruit and vegetable consumption</p> <p>Make referrals to a lactation consultant for new breastfeeding mothers</p> <p>Provide resources and tools for low-income families to eat healthy on a budget</p> |
| Promote Community Engagement and Education | Connect with diverse groups of people to inform them about the benefits of HEAL and to establish bidirectional communication, trust, and support to advance HEAL approaches | <p>Identify gaps in access to healthy foods and facilitate discussions with community leaders to identify solutions</p> <p>Engage community groups such as girls’ and boys’ clubs, YWCA and YMCA, summer camps, fitness centers, to promote consistent HEAL messages</p> <p>Include children and youth with special health care needs in programming for physical activity</p> |
| Activate Intermediaries and Service Providers | Inform and educate intermediaries and service providers who transmit information about HEAL to others | <p>Work with the health care system to launch a fruit and vegetable prescription program</p> <p>Conduct HEAL trainings for early education and care professionals (eg, teachers, Head Start, and childcare providers)</p> <p>Develop nutrition and active living education materials for Early Periodic Screening, Diagnostic and Treatment providers</p> |
| Facilitate Partnerships and Multisector Collaborations | Foster relationships and cultivate multisector collaborations with stakeholders about individual, community and/or population approaches to HEAL | <p>Leverage local media to promote HEAL messages and events, for example, in the WIC^c program</p> <p>Work with municipal planners and engineers to assess walkability of neighborhoods and propose enhancements to increase community walkability</p> <p>Initiate a Community of Practice or Community of Learning (peer-to-peer network) focused on HEAL strategies</p> |
| Align Organizational Policies and Practices | Revise or adapt policies, procedures, and practices within institutions that support HEAL | <p>Incorporate nutrition standards that align with the Dietary Guidelines for Americans into institutional procurement policies and concessions</p> <p>Promote active transport to schools (eg, walking school bus)</p> <p>Be an active member within a professional organization and provide input on educational competencies, standards of practice, or standards of professional performance</p> |
| Foster Physical, Natural, and Social Environments | Design, foster, and maintain physical (built), natural (ecosystems), and social settings within institutions and public environments that support HEAL | <p>Equip schools with adequate food storage and preparation spaces in kitchens/cafeterias</p> <p>Remove unhealthy food and beverage advertising in schools, worksite cafeterias, and childcare centers</p> |
| <i>(continued on next page)</i> | | |

Figure 2. Examples of multidimensional strategies for healthy eating and active living (HEAL) by Individual Plus Policy, System, and Environmental (I+PSE) action component.

| I+PSE component | HEAL definition ^b | Example strategies |
|--|---|--|
| | | Connect food retail to the emergency food system to decrease food waste Redesign/refresh school playgrounds and incorporate gardens or edible landscapes |
| Advance Public Policies and Legislation | Develop strategies to inform change to laws, regulations, and public policies (local, state, federal) that support HEAL | Provide comment on regulation proposals and state strategic planning processes Write a nutrition and health impact statement of a proposed public policy Provide testimony at a hearing or serve on a government advisory committee Monitor and engage in annual Federal appropriations and omnibus legislation, such as the Child Nutrition Act, Farm Bill, or Older Americans Act |
| <p>^aThis figure can be adapted to any area of nutrition and/or dietetics practice.</p> <p>^bDefinitions for each action components can be tailored based on topic, area of dietetics practice, or community need.</p> <p>^cWIC = Special Supplemental Nutrition Program for Women, Infants, and Children.</p> | | |

Figure 2. (continued) Examples of multidimensional strategies for healthy eating and active living (HEAL) by Individual Plus Policy, System, and Environmental (I+PSE) action component.

partners should closely study how power, policy, politics, and processes impact the adaptive challenge and influence individuals, organizations, and communities. Policy development requires RDNs to recognize that the determinants of health are dependent on policy and political action²⁴ to produce change. Public policies generate downstream impacts on individuals and families, institutions, communities, and populations, and require RDNs to be engaged in and to drive the needed changes to improve health and well-being. Complacency on food and nutrition policy is a disservice to students, patients, clients, communities, and the dietetics profession because it denies opportunities to tackle adaptive challenges, decreases the value proposition of RDNs, and limits opportunities to optimize individual and population nutrition and health status.

PHASE 2: FORMULATE AND IMPLEMENT MULTIDIMENSIONAL SOLUTIONS

Once the determinants of health are assessed and root causes are diagnosed, RDNs and their partners can formulate, plan, and implement strategic solutions using the components in Phase 2 (Figure 1). Inspired by the Spectrum of Prevention²⁵ and the System of Prevention Framework,⁹ the center of the

Framework highlights 7 action components that support the planning and implementation of a continuum of strategies. The direction and complexity of the strategies are driven by the scope and depth of the determinants of health assessment; capacity of practitioners, organizations, and stakeholders; and availability of resources to garner the greatest benefits.²⁶⁻²⁸ The aim of phase 2 of the I+PSE Conceptual Framework for Action is to develop coordinated strategies within each action component. When synergistic solutions are implemented, they begin to alter the contextual influences (ie, determinants of health), while amplifying and sustaining positive health impacts.¹⁸ This produces additive or multiplicative effects, including greater reach, higher dose response, longer-term outcomes, and increased sustainability.³⁻⁵

The Framework, and specifically the action components, are highly versatile and can be tailored to the adaptive challenge and area of dietetics practice. For the purposes of this article, descriptions of each action component are presented and are accompanied by healthy eating and active living examples in Figure 2.

Strengthen Individual Knowledge and Behavior

RDNs are trained to enhance an individual's knowledge, skills, and

behavior using evidence-based behavioral change approaches and nutrition education. It is well-established that the efficacy in establishing long-term healthy eating and activity behaviors among individuals is limited due to a myriad of social ecological influences.³⁰ However, combining individual behavior-change strategies with strategies from other action components is likely to stimulate stronger interventions and more sustainable results. The intent of this action component is to strengthen individual and household decision-making and capabilities of participating in or being a beneficiary of an activity or service that is essential to improving their nutrition and health status. This may include providing direct services to individuals and families to build their knowledge and skills to support their nutrition and health goals in both clinical and nonclinical settings.

Promote Community Engagement and Education

Connecting with diverse community members, leaders, and stakeholders to establish rapport and regular communication will strengthen trust and support for community change to occur. Conducting a community assessment using a determinants of health lens gleans an understanding of the various contextual capacities of a community. Community engagement

aids in more effectively identifying problems and positions that RDNs and community members can use to form coordinated solutions, including educational messages. This action component may include increasing community awareness on a specific nutrition or health topic using evidence-based messages that are tailored to the community.

Activate Intermediaries and Service Providers

Intermediaries (eg, nurses, certified health educators, social workers, teachers, physicians, and media) are instrumental in informing, educating, and transmitting information to others (eg, patients, clients, students, community, decision-makers). Activating and empowering intermediaries and service providers to support and advance nutrition and health strategies, such as communicating consistent messages, increases opportunities for multidisciplinary cooperation and coordination across the 7 action components.

Facilitate Partnerships and Multisector Collaborations

Relationships are paramount to the success of addressing adaptive challenges and are a common thread throughout the Framework. Establishing greater collaboration among organizations enables them to work together for the health of the whole system rather than focusing on technical fixes to individual parts.³¹ This action component encourages RDNs to build connections—informal or formal—to cultivate multidisciplinary collaborations and to apply diverse perspectives in formulating effective strategies. This can be done by engaging with existing community networks and coalitions, forming ad hoc groups to solve a specific problem, or assembling a group of committed stakeholders focused on complex problems requiring multi-prong solutions. Forming public–private partnerships whose values, policies, and practices align may also be considered.⁸

Align Organizational Policies and Practices

RDNs should examine their organization's practices and policies and the degree to which they support healthy

solutions at the operations, program/service, and workforce levels. This will likely require revising or adapting policies, regulations, and procedures within the organization to better support healthy solutions (ie, “walk the walk”). Often referred to as “little p” policies, organizational policies are more feasible to establish or modify compared with public policy. Changes in organizational policies may also lay the groundwork and build the evidence to influence public policies.

Foster Physical, Natural, and Social Environments

The outcomes of the determinants of health assessment, in addition to the literature on behavioral design and how built and natural environments influence health, are the foundation for these strategies. The intent of this action component is to examine, modify, and design physical spaces and natural settings within organizations and public spaces that support individual, social and cultural, economic, and ecological health. RDNs can work closely with other sectors, such as planners, engineers, and developers, to evaluate and design workplaces; public spaces; and neighborhoods that ensure physical spaces support human; social; and environmental health.

Advance Public Policies and Legislation

Public policies at local, county, state, and federal levels produce significant downstream influences on individual, household, community, and population health. Often referred to as “big P” policies, this component is focused on strategies for ensuring new and existing laws, regulations, and public policies support nutrition and health. Public policy is central to dietetics practice whether it is state licensure, federal regulations for nutrition assistance programs, or reimbursement for services. Public policy represents a powerful lever for change and offers tremendous opportunities for greater RDN involvement. Participating in public policy events organized by the Academy of Nutrition and Dietetics or by state affiliates is a great way to be engaged. Completing a comprehensive determinants of health assessment and/or policy impact analyses enables

RDNs and their partners to better inform and educate policymakers on how food and nutrition policies impact constituent health. Furthermore, RDNs can serve as advocates for “health in all policy” strategies to ensure that public policies achieve positive health outcomes while minimizing unintended or negative consequences.

PHASE 3: EVALUATE IMPACT

As with any assessment and planning initiative, evaluation is critical. A logic model can serve as an appropriate linear structure for mapping inputs, outputs, outcomes, and impacts for each action component. However, the complexity of an adaptive challenge that necessitates multidimensional solutions requires equally dynamic methodologies to measure impact (Figure 1, phase 3). This emerging area offers opportunities for further development, including methods, tools, and quantitative and qualitative measures. When measuring impact, there are 6 dimensions and the following example questions for consideration:

- Individual: How did the service or intervention change a patient, client, or student's readiness to adopt healthy eating habits? What stages of change did a client progress in meeting health goals? What behavior change has been achieved? What anthropometric measurements demonstrate success?
- Practice: What was the level of our readiness to drive change? To what degree did we experience growth? How did we strengthen our leadership capacity and how did that contribute to organizational learning? When faced with a challenge, do we have tools that support making a quick shift? Did our actions strengthen the value proposition and relevance of our work as RDNs?
- Program: What were the independent outcomes and collective impact of the multidimensional strategies? What are the stability and sustainability of the strategies to drive long-term impact? What are the synergistic effects of the strategies? Which strategies can be further optimized for greater impact? Which strategies

PRACTICE APPLICATIONS

| Adaptive Challenge: Food Waste Problem Statement: Approximately 30% to 40% of food is wasted in the United States ³³ | | |
|---|--|---|
| Phase 1: Determinants of Health Assessment | Phase 2: Formulate and Implement Solutions | Phase 3: Evaluate Impacts |
| <p>Questions to Ask:</p> <p>“What do we know about food waste in our community?”</p> <p>“How do we apply systems thinking to identify the contributors of food waste in our community?”</p> | <p>Questions to Ask:</p> <p>“Based on what we learned from the determinants of health assessment, what actions can we take in my community to reduce food waste?”</p> <p>“How do we work with others to gradually build strategies across all components for a comprehensive food waste reduction plan?”</p> | <p>Questions to Ask:</p> <p>“What were the results of the food waste strategies? Successes?”</p> <p>“Reflecting on the strategies and results, what lessons did we learn and what changes will we make?”</p> |
| <p>Examples</p> <p>Social</p> <ul style="list-style-type: none"> • What percentage of the community does not have a working refrigerator to store food? • Are there gleaning projects that link food producers to emergency food assistance programs? • What percentage of waste in landfills is food? • Where is the landfill located and what are the demographics of that area? <p>Commercial</p> <ul style="list-style-type: none"> • How much food is disposed from grocery stores? Restaurants? Food manufacturers? • Who are the commercial waste haulers? Is there competition among the haulers? • Are composting services offered to residential or commercial sites? • What does my organization do with leftover or expired food? <p>Political</p> <ul style="list-style-type: none"> • What ordinances or laws are in place related to the disposal of food waste? • Have policymakers proposed regulations or laws addressing | <p>Examples</p> <p>Strengthen Individual Knowledge and Skills</p> <ul style="list-style-type: none"> • Attend a composting/vermiculture class hosted by Cooperative Extension • Make referrals to organizations who can assist patients, clients, and students in obtaining a working refrigerator or stove (ie, means to safely store and prepare food) <p>Promote Community Engagement and Education</p> <ul style="list-style-type: none"> • Connect small- and mid-sized producers with local food banks and pantries • Present on the Bill Emerson Good Samaritan Food Donation Act³³ to food retailers <p>Activate Intermediaries and Service Providers</p> <ul style="list-style-type: none"> • Provide a seminar to local foodservice providers on ways to reduce food waste in cafeterias and patient meals <p>Facilitate Partnerships and Multisector Collaborations</p> <ul style="list-style-type: none"> • Host a food waste discussion with colleagues on how our organization can reduce food waste • Invite commercial composters and waste haulers to our organization for a roundtable discussion on food waste • Join or start a community food waste reduction coalition | <p>Examples</p> <p>Individual</p> <ul style="list-style-type: none"> • How many residents in our community are composting compared with 5 years ago? <p>Practice</p> <ul style="list-style-type: none"> • How did we improve the efficiency or efficacy in our practice by addressing food waste? <p>Program</p> <ul style="list-style-type: none"> • What was the spread and scale of action to reduce food waste within our organization and/or across similar organizations (ie, school, hospital, food-service organization)? <p>Organization</p> <ul style="list-style-type: none"> • What was the economic and environmental impact of implementing food waste reduction strategies in our organization? Community? Are the changes permanent? <p>Policy</p> <ul style="list-style-type: none"> • What public policies related to food waste have been enacted and what was the impact on the community? <p>Population</p> <ul style="list-style-type: none"> • How has the reduction in food waste in landfills impacted the release of greenhouse gas emissions and/or surface water quality in the community? |
| <i>(continued on next page)</i> | | |

Figure 3. How registered dietitian nutritionists and their partners can apply the Individual Plus Policy, System, and Environmental (I+PSE) Conceptual Framework for Action to practice. A community food waste scenario.

| Adaptive Challenge: Food Waste Problem Statement: Approximately 30% to 40% of food is wasted in the United States ³³ | | |
|--|--|---------------------------|
| Phase 1: Determinants of Health Assessment | Phase 2: Formulate and Implement Solutions | Phase 3: Evaluate Impacts |
| <p>food waste? What was the result?</p> <ul style="list-style-type: none"> • Who are the allies or adversaries on food waste regulation? Who else should be engaged? • What are the facilitators or barriers to passing food waste regulation? | <p>Align Organizational Policies and Practices</p> <ul style="list-style-type: none"> • Register our organization as a US Food Loss and Waste Champion³² <p>Foster Physical, Natural, and Social Settings</p> <ul style="list-style-type: none"> • Demonstrate to leadership the economic and environmental benefits of installing a food pulper within our foodservice operation <p>Advance Public Policies and Legislation</p> <ul style="list-style-type: none"> • Develop a policy brief on food waste for our local or affiliate dietetic organization • Present to state lawmakers a proposal to offer a state tax incentive for specialty crop producers who donate fresh fruits and vegetables to emergency food providers | |

Figure 3. (continued) How registered dietitian nutritionists and their partners can apply the Individual Plus Policy, System, and Environmental (I+PSE) Conceptual Framework for Action to practice. A community food waste scenario.

did not contribute to the synergistic impact?

- Organization: To what extent is systems thinking and reflection embedded in the organization? Which policies and practices within the organization have changed the culture of the organization to better address the adaptive challenges? To what extent have partnerships advanced change? What is the organization's strategy for formulating and implementing innovative solutions? How clear are the vision and change strategies of the organization communicated internally and externally?
- Policy: Which relationships with policymakers have been formed or strengthened? How has policy and political knowledge improved? Moving upstream, what policy levers at the population, organization, program, and practice levels can amplify food and nutrition services? To

what degree has policy shifted to strengthen constituent, community, or population health? What policies have been implemented and what is their downstream impact (eg, alleviated or perpetuated health disparities)?

- Population: What are the changes in health, social, economic, and environmental indicators? What shifts have occurred that enable a community to better bounce back from a biological, economic, or environmental catastrophe (eg, COVID-19 pandemic) and regain a high quality of life? How have public and private investments impacted health and equity? How have drivers or influencers within various systems changed, and what is the degree of the transformation? How has the collective wisdom about the adaptive challenge and viable solutions changed within organizations, stakeholders, policymakers, and the community?

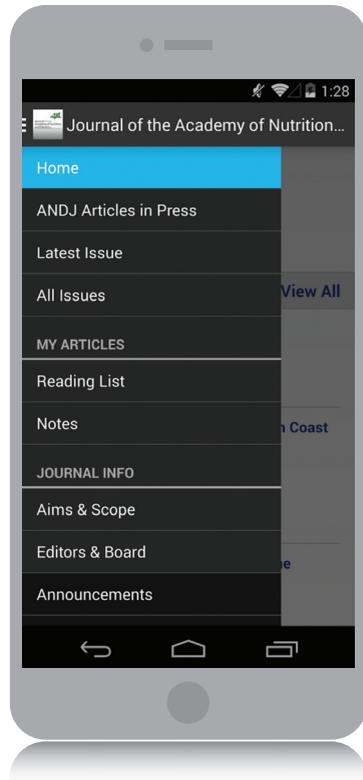
Figure 3 presents a theoretical scenario of how RDNs and their partners can apply the Framework to address the adaptive challenge of food waste. The scenario offers example determinants of health assessment questions, diverse actions, or strategies that RDNs and their partners can use to reduce food waste and, lastly, approaches to determining the impact of food waste reduction strategies. This does not represent an exhaustive approach, but a thumbnail demonstration of how the 3 phases, coupled with systems thinking and reflection, can build a robust approach to tackling adaptive challenges.

PRACTICE IMPLICATIONS

Research

There are numerous opportunities to better understand the drivers of adaptive challenges and how multidimensional strategies can address complex nutrition and health issues. The Framework offers a continuum for

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nutrition research using a systems orientation and modeling to benchmark best practices.² The contributions to nutrition science and practice will drive profound change, including greater investments in nutrition research, nutrition interventions,³⁴ informed nutrition policies and environmental strategies, and improved population-level health and equity.¹² This requires model validation, multi-dimensional performance monitoring, and evaluation strategies specifically designed for food and nutrition systems. This may include measures of productivity, effectiveness, and efficiency through the calculation of ratios of inputs, outputs, and outcomes.⁵

Education and Professional Development

To effectively tackle adaptive challenges, RDNs will require new skills in systems thinking and systems methods, determinants of health assessment, root cause analyses, policy impact analyses, and evaluating systems transformation.^{35,36} This requires greater training and more interdisciplinary curricula for dietetics and nutrition, public health, and medical programs in order to integrate multilevel science into practice.^{18,37,38} It is recommended that policy be integrated throughout dietetics education with an emphasis on how specifically public policies and politics shape determinants of health and impact individuals and communities.^{21,22} Including these competencies and skill sets within education and practice will build RDN capacity and responsiveness to adaptive challenges, in addition to building the value proposition and relevance of RDNs and dietetics services.

Nutrition Practice

Regardless of area of practice, the COVID-19 pandemic has challenged how RDNs provide food and nutrition services. The disruption shifted RDNs to telework and to rely on digital tools to communicate with students and interns, patients, clients, employees, health care providers, and communities. In addition, the pandemic revealed the interconnections between pre-existing conditions (eg, diabetes, cardiovascular disease, and obesity) and rates of

infection and risk of death from COVID-19. This is in addition to disruptions and vulnerabilities across food supply chains and the economic downturn resulting in greater food-insecure households. The Framework offers a broad, evidence-based playbook for RDNs to be agile and strengthen their practice, programs, organizations, policies, and the populations they serve, especially during times of uncertainty. It supports professional growth and development,^{38,39} program and organizational strategic planning, quality improvement, operational change management, communications, assessment and evaluation, and policy development. Strengthening these capacities can build greater trust, transparency, integrity, and accountability within nutrition programs, organizations, and communities. RDNs can use the Framework as a guide to increase the efficacy, quality, and sustainability of nutrition services; to better articulate the benefits, outcomes, and impacts of nutrition initiatives; and be of greater value to partners, stakeholders, and policymakers.

Nutrition Policy

Organizational and public policies are powerful tools to drive change. Currently, there is a lack of political leadership and governance to develop and enact policies that are responsive to the adaptive challenges that RDNs face.^{24,28} Social scientists are positioning “political epidemiology” as a cross-disciplinary field of practice to examine and document the downstream effects of policy decisions on the health of populations.^{22,23} The Framework weaves policy into the determinants of health assessment, solution formulation, and impact evaluation. Integrating policy impact analyses into dietetics research, education, and practice offers opportunities to better align with and advocate for evidence-based food and nutrition policies. RDNs who strengthen their expertise in policy processes and strategic communication can better educate policymakers on the positive and negative consequences of food and nutrition policy.

Diet and nutrition are complex issues and are directly related to the human, economic, social, and environmental health of individuals, households, organizations, communities, and populations. With complex issues come

tremendous challenges, such as the global syndemic (ie, co-occurring health risks) of obesity, undernutrition, and climate change,⁴⁰ which require ongoing multidimensional and innovative strategies. RDNs are best positioned to address these adaptive challenges, work in partnership with others, and to lead the transformation needed to restore and build systems that better support nutrition and health. Integrating determinants of health assessment and multidimensional strategies into dietetics practice is not a panacea for solving the myriad of adaptive challenges facing the dietetics profession. However, cultivating systems thinking across all dietetics practice areas and adopting tools such as the Framework enable RDNs to form strategic partnerships to better analyze complex issues, make strategic decisions,² and implement innovative and sustainable solutions. When applied, the synergistic effect of multidimensional strategies will strengthen dietetics practice, nutrition programs and services, organizational management and leadership, public policies, and improve the health of individuals and communities.

References

1. Heifetz R, Grashow A, Linsky M. *The Practice of Adaptive Leadership. Tools and Tactics for Changing Your Organization and the World*. Cambridge Leadership Associates; 2009.
2. Carey G, Malbon E, Carey N, et al. Systems science and systems thinking for public health: A systematic review of the field. *BMJ Open*. 2015;5(12). 2015:e009002.
3. Honeycutt S, Leeman J, McCarthy WJ, et al. Evaluating policy, systems, and environmental change interventions: Lessons learned from CDC's Prevention Research Centers. *Prev Chronic Dis*. 2015;12:E174.
4. Leeman J, Meyers AE, Ribisl KM, Ammerman AS. Disseminating policy and environmental change interventions: Insights from obesity prevention and tobacco control. *Int J Behav Med*. 2015;22(3):301-311.
5. Stroh DP. *Systems Thinking for Social Change. A Practical Guide to Solving Complex Problems, Avoiding Unintended Consequences, and Achieving Lasting Results*. Chelsea Green Publishing; 2015.
6. Glanz K, Bishop DB. The role of behavioral science theory in development and implementation of public health interventions. *Annu Rev Public Health*. 2010;31(1):399-418.
7. O'Connor J. Chronic disease prevention as an adaptive leadership problem. *J Ga Public Health Assoc*. 2017;6(4):398-400.
8. Institute of Medicine, Committee on Accelerating Progress in Obesity Prevention. *Accelerating Progress in Obesity Prevention: Solving the Weight of the Nation*. National Academies Press; 2012.
9. Sims J, Aboelata MJ. A system of prevention: Applying a systems approach to public health. *Health Promot Pract*. 2019;20(4):476-482.
10. Centers for Disease Control and Prevention, Division of Community Health. *A Practitioner's Guide for Advancing Health Equity: Community Strategies for Preventing Chronic Disease*. US Department of Health and Human Services; 2013.
11. Healthy People 2020. Social Determinants of Health. Office of Disease Prevention and Health Promotion, US Health and Human Services. Accessed December 30, 2019, <https://www.healthypeople.gov/2020/topics-objectives/topic/social-determinants-of-health>.
12. Ten essential public health services and how they can include addressing social determinants of health inequities. Social Determinants of Health: Know What Affects Health. Centers for Disease Control and Prevention. Updated January 29, 2018. Accessed December 30, 2019, https://www.cdc.gov/publichealthgateway/publichealthservices/pdf/ten_essential_services_and_sdoeh.pdf.
13. Kickbusch I, Allen L, Franz C. The commercial determinants of health. *Lancet*. 2016;4:e895-e896.
14. Millar JS. The corporate determinants of health: How big business affects our health, and the need for government action!. *Can J Public Health*. 2013;104:e327.
15. Ireland R, Bunn C, Reith G, et al. Commercial determinants of health: Advertising of alcohol and unhealthy foods at sporting events. *Bull World Health Organ*. 2019;97(4):290-295.
16. McKee M, Stuckler D. Revisiting the corporate and commercial determinants of health. *Am J Public Health*. 2018;108(9):1167-1170.
17. US Preventive Services Task Force. *The Guide to Clinical Preventative Services*. Agency for Healthcare Research and Quality; 2006.
18. Huang TT, Drewnowski A, Kumanyika SK, Glass TA. A systems-oriented multilevel framework for addressing obesity in the 21st century. *Prev Chronic Dis*. 2009;6(3):1-10.
19. Food marketing. Rudd Center for Food Policy and Obesity. Accessed January 2, 2020, <http://www.uconnruddcenter.org/food-marketing>.
20. McCarthy J, Minovi D, Wootan M. Scroll and shop. Food marketing migrates online. Center for Science in the Public Interest. Accessed January 2, 2020, https://cspinet.org/sites/default/files/attachment/Scroll_and_Shop_report.pdf.
21. Mishori R. The social determinants of health? Time to focus on the political determinants of health? *Med Care*. 2019;57(7):491-493.
22. Kickbusch I. The political determinants of health—10 years on. *BMJ*. 2015;350:h81. <https://doi.org/10.1136/bmj.h81>.

23. Mackenbach JP. Political determinants of health. *Eur J Public Health*. 2014;24(1):2. <https://doi.org/10.1093/eurpub/ckt183>.
24. Bambra C, Fox D, Scott-Samuel A. Towards a politics of health. *Health Promot Int*. 2005;20(20):187-193.
25. Cohen L, Swift S. The spectrum of prevention: Developing a comprehensive approach to injury prevention. *Inj Prev*. 1999;5(3):203-207.
26. Abson DJ, Fischer J, Leventon J, et al. Leverage points for sustainability transformation. *Ambio*. 2017;46(1):30-39.
27. Johnston LM, Matteson CL, Finegood DT. Systems science and obesity policy: A novel framework for analyzing and rethinking population-level planning. *Am J Public Health*. 2014;104(7):1270-1278.
28. Meadows D. *Thinking in Systems. A Primer*. Earthscan; 2008.
29. MyPlate. US Department of Agriculture. Accessed February 4, 2021, MyPlate.gov.
30. Smedley BD, Syme SL; Institute of Medicine Committee on Capitalizing on Social Science and Behavioral Research to Improve the Public's Health. In: *Promoting Health: Intervention Strategies from Social and Behavioral Research*. National Academies Press; 2000.
31. Senge P, Hamilton H, Kania J. The dawn of system leadership. *Stanford Soc Innov Rev*. 2015;13(1):26-33.
32. Food Waste FAQs. US Department of Agriculture. Accessed December 10, 2020, <https://www.usda.gov/foodwaste/faqs>.
33. Bill Emerson Good Samaritan Food Donation Act. PL 104-210, HR 2428, Oct 1996. Accessed December 10, 2020, <https://www.govinfo.gov/content/pkg/PLAW-104publ210/pdf/PLAW-104publ210.pdf>.
34. Gortmaker SL, Swinburn B, Levy D, et al. Changing the future of obesity: Science, policy and action. *Lancet*. 2011;378(9793):838-847.
35. Erwin PC, Brownson RC. The public health practitioner of the future. *Am J Public Health*. 2017;107:1227-1232.
36. Lee BY, Bartsch SM, Mui Y, Haidari LA, Spiker ML, Gittelsohn J. A systems approach to obesity. *Nutr Rev*. 2017;75(51):94-106.
37. Lenihan P, Welter C, Brandt-Rauf P, et al. The University of Illinois at Chicago School of Public Health Doctor of Public Health Program: An innovative approach to doctoral-level practice leadership development. *Am J Public Health*. 2015;105(suppl 1):S55-S59.
38. Fleming WO, Apostolico A, Mullenix A, Starr K, Margolis L. Putting implementation science into practice: Lessons from the creation of the National Maternal and Child Health Workforce Development Center. *Matern Child Health J*. 2019;23(6):722-732.
39. Raskind I, Chapple-McGruder T, Mendez D, et al. MCH workforce capacity: Maximizing opportunities afforded by a changing public health system. *Matern Child Health J*. 2019;23:979.
40. Swinburn BA, Kraak VI, Allender S, et al. The global syndemic of obesity, undernutrition, and climate change: *The Lancet* Commission report. *Lancet*. 2019;393(10173):791-846.

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