

Educating and Training a Workforce for Nutrition in a Post-2015 World^{1,2}

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ABSTRACT

Nearly all countries in the world today are burdened with malnutrition, manifesting as undernutrition, micronutrient deficiencies, and/or overweight and obesity. Despite some progress, efforts to alleviate malnutrition are hampered by a shortage in number, skills, and geographic coverage, of a workforce for nutrition. Here, we report the findings of the Castel Gandolfo workshop, a convening of experts from diverse fields in March 2014 to consider how to develop the capacity of a global cadre of nutrition professionals for the post-2015 development era. Workshop participants identified several requirements for developing a workforce for nutrition, including an ability to work as part of a multisectoral team; communication, advocacy, and leadership skills to engage decision makers; and a set of technical skills to address future challenges for nutrition. Other opportunities were highlighted that could immediately contribute to capacity development, including the creation of a consortium to link global North and South universities, online training modules for middle managers, and practical, hands-on experiences for frontline nutrition workers. Institutional and organizational support is needed to enable workshop recommendations on education and training to be effectively implemented and sustained. The findings from the Castel Gandolfo workshop can contribute to the delivery of successful nutrition-relevant actions in the face of mounting external pressures and informing and attaining the forthcoming Sustainable Development Goals. *Adv Nutr* 2015;6:639–47.

Keywords: capacity development, Sustainable Development Goals, malnutrition, workforce, training

Introduction

Good nutrition is the bedrock of human well-being. In a child's first 1000 d from conception to the second birthday,

good nutrition enables optimal brain and immune system development and functioning, which, in turn, averts death and equips a child to grow, thrive, and reach his or her full potential. Throughout the entire life cycle, good nutrition results in greater cognitive, motor, and social development, educational attainment, productivity, and lifetime earnings (1–3).

Nutrition currently enjoys a high level of attention and recognition from donors, country governments, civil society, academia, and the private sector. A string of recent reports, including the 2008 and 2013 Lancet Series on Maternal and Child Nutrition, the Global Nutrition Report

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(4), and the Challenge Paper on Hunger and Malnutrition from the Third Copenhagen Consensus (5), together with high-level meetings such as the Nutrition for Growth Summit in London (2013) and the Second International Conference on Nutrition (2014) have provided consensus on the importance of alleviating malnutrition and the means to do so. The year 2015 marks the designated endpoint of the Millennium Development Goals, the 8 time-bound health and development goals adopted in 2000, and the emergence of the Sustainable Development Goals, a proposed set of global goals for the period 2015–2030 (6, 7).

We are entering a new era, the anthropocene, of sustainable development in which we can no longer ignore the impact of human activity on the environment and climate. These disruptions have enormous ramifications on health, nutrition, and well-being. In 2015, major decisions will be made toward what type of future we want. There will be new risks but also opportunities. In addition, we need a new type of workforce that can carve out a future agenda for the complexities of nutrition that we must address.

In this context there is a need to re-think how capacities to advance nutrition can be developed to support policies, research, program planning, financing, and delivery of relevant services. The promise to deliver nutrition at scale cannot be met if it is not accompanied by investments in the capacities of people, organizations, and institutions to support emerging targets, programs, and agendas (4). This challenge is amplified by a number of drivers, including climate change, population growth, urbanization, extreme poverty, energy-intensive dietary patterns, water scarcity, land degradation, and intense social conflicts and divisions (8–10).

The purpose of this article is to highlight key gaps and to examine recent efforts to educate, train, and develop a workforce for nutrition. It also summarizes the recommendations of the Castel Gandolfo workshop, a convening of experts in March 2014 in Castel Gandolfo, Italy, to better understand and to frame the evolving need of capacity development for a workforce to deliver nutrition in the post-2015 development era. During the workshop, participants addressed the following questions:

1. What knowledge and skill sets will be needed to ensure nutrition is effectively addressed in a post-2015 environment?
2. With which other disciplines and sectors should those working in nutrition interact to tackle the challenges ahead? What competencies are needed for those working in nutrition to effectively interact with other disciplines?
3. What curriculum is required at the postgraduate level to train people in nutrition capacity development who come from varying educational backgrounds?
4. What is the best approach to train people to influence and change policymaking for nutrition?

Capacity development is referred to throughout this article as the process through which individuals, organizations,

and societies obtain, strengthen, and maintain the skills and capabilities to set and achieve their own development objectives over time (6, 11–13). Inherent in this definition is the understanding that capacity development must occur consistently at 3 interrelated and interdependent levels: individual, organizational, and systemic (13–16). The main focus of this article is on the strategies to develop individual capacities, but there are considerations and implications for the institutions and organizations responsible for and affected by individual capacity development issues in nutrition-relevant actions and services.

Current Capacity Needs for Nutrition

Despite some progress, the global community is still struggling to address the alarming scale and scope of malnutrition. Experience and best practices were amassed for what to do to alleviate undernutrition (17), yet capacity continues to be a critical limiting factor for the scale-up, in both coverage and impact, and sustainability of programs. Partly, this capacity requires the continued ability to do efficacy and effectiveness research but also training on better implementation, which includes monitoring, evaluation, and reporting of capacity development outcomes. We do not solely need more studies and more data, but more and improved capacity to deliver successful interventions, operationalize nutrition policies and strategies, and ensure leadership. For nutrition to be central to development, we need to have strong alliances, take timely and decisive action, and create, and be subject to, robust accountability (15, 18). Nutrition is not alone in this struggle; the failure to adapt capacity to the local context is also apparent in the broader health and food systems (19).

Governments, civil society, international organizations, donors, and the private sector all play important roles in developing capacity across a range of sectors (including health, education, agriculture, social protection, water, and sanitation) at individual, organizational, and systemic levels. Long-term investment is needed to fuel the creation of enabling environments in which laws, systems, and policies are supportive of nutrition goals (14). Yet discourse about capacity development is often limited or poorly supported because it is rarely prioritized by funding organizations and is often undervalued compared with the stated, official purposes of grants and contracts (20, 21).

Assessing Capacity for Nutrition: Building on What We Know

Several investigators have proposed frameworks to better measure gaps in capacity (4, 11, 13, 22), yet few have used them in a systematic manner. We lack an understanding of the relation between capacity of the frontline workers or program managers, their organizations, and the system as a whole (15). We also have no gold standard to assess capacity at all levels. The 2014 Global Nutrition Report, the most comprehensive, authoritative report on available global nutrition data, concludes that data on capacity are lacking and that a systemic assessment of capacity gaps is needed, especially within high-burden countries (4). A

more recent report, *Healthy Food for A Healthy World*, also makes clear the need for the development of capacity to improve nutrition (23). This echoes the conclusions of many previous investigators (12, 15, 24).

Nutritionally vulnerable populations require access to effective nutrition services, which in turn requires a well-qualified and supported workforce. Examples from the broader health workforce have helped identify several factors that are likely to contribute to increased quality of services, including balanced workload, appropriate supervision, adequate supplies and equipment, continuous training, fair remuneration, and respect from the community (25). There must also be a focus on achieving the optimal geographic distribution of health workers, as several regions, especially poor rural areas, experience the greatest effects of inadequate or no access to care (26).

The evaluations of several initiatives to bring nutrition services to scale have elucidated several key gaps and bottlenecks in capacity. First, there is a dearth of high-quality training for front-line nutrition workers. Gillespie et al. (15) argued that it is no coincidence that the regions with insufficient service delivery are those that lack appropriate academic curricula and high-quality training programs. Large parts of these regions, Africa and Southern Asia in particular, have outdated training and assessment materials; a lack of practical, hands-on training; and inadequate academic focus on public health nutrition. Shrimpton et al. (13) noted that there is no authoritative source of information that pertains to the education of the workforce globally, and, in many institutions that offer nutrition programs, what is being taught is often poorly or narrowly focused and outdated.

Second, there is a lack of effective leadership and advocacy skills training (15). Shrimpton et al. (13) noted in their capacity assessment of 3 Asian countries that there was a dearth of training in advocacy strategies to challenge ministers and policymakers to create supportive policies and funding streams.

Third, the nutrition workforce requires not only specific skills but also the development of broader skills that enable individuals to work as part of multisectoral, multistakeholder, or multidisciplinary teams. This need is underscored by Pelletier et al. (27), who note that the lack of multisectoral collaborations stems, at least in part, from poor training of the nutrition workforce to work as part of a multidisciplinary team. Underlying this fact may be the lack of attention to teaching nutrition as a multidisciplinary subject within academic institutions.

Overview of the Castel Gandolfo Workshop

In March 2014, the United Nations World Food Program, the Institute of Human Nutrition of Columbia University, and Sight and Life convened leaders from across multiple sectors and disciplines to open a dialogue and to consider future work toward building and developing a global cadre of new professionals equipped to support nutrition at scale around the world. *The New Nutrition Workforce Workshop: Educating and Training for a Post-2015 World*

aimed to better understand the skills and knowledge that a workforce requires to address the present and future challenges to improve nutrition.

Participants were invited from a wide spectrum of fields (health, agriculture and food systems, nutrition, anthropology, water and sanitation, economics, and information technology) and sectors (academia, civil society, business, donors, and government) to assemble a dynamic cross-section of approaches, needs, and experiences related to capacity strengthening in nutrition. Participants were encouraged to think innovatively as to the required capabilities of a new generation of professionals empowered to address the challenges in scaling up nutrition globally.

Outcomes of the Castel Gandolfo Workshop

The following sections summarize the participant and breakout group responses to the specific questions posed.

New knowledge and skills to address the post-2015 challenges

There was agreement on several ongoing and future challenges that require a highly skilled workforce for nutrition, including a growing burden of overweight, obesity, and noncommunicable diseases; industrialization of the food chain; and climate change. The recommendations of the workshop largely focused on those who would be responsible for implementing and delivering high-quality nutrition interventions and services. To address nutrition challenges in the post-2015 environment, teams of program managers and frontline staff working to implement nutrition interventions will need to acquire technical knowledge or hard skills in nutrition (e.g., basic nutrition science, public health nutrition, the food environment, quantitative analysis) as well as soft skills (e.g., communication, advocacy, management, and team-building skills across disciplines). A question remained as how best to ensure a proper distribution of these skills both within a team and within an individual.

The program manager of the post-2015 world will need to be able to understand and apply systems thinking to all facets of nutrition-related programming (e.g., intervention design, implementation, monitoring, and evaluation). This includes a keen understanding of the interactions between food and nutrition systems (including biology and social and cultural factors) and health systems (28). Translating this understanding into effective interventions will require the skills to design programs that facilitate the adoption of good nutrition practices and to enable access to nutritious food through various channels, such as through markets or social protection programs. They must draw on expertise and best practices to assess epidemiologic changes, trends in urbanization, and the risks of volatile climate, financial, and political environments.

A successful program manager is one who understands the local context and the multiple threats to adequate nutrition. Program managers will be faced with seemingly competing demands, such as the need to address both the challenges of undernutrition and of overweight and obesity within the same geography. They must understand how to

better link the current health systems for treatment of diet-related diseases such as diabetes and hypertension while simultaneously addressing a food environment that provides limited access to safe and nutritious foods.

Although the specific technical skills required of frontline workers will be dictated by the programs in which they work, in general those delivering nutrition services should be equipped with an understanding of how their work fits in the broader health and food systems. The frontline worker will need adequate supervisory support for addressing issues that may arise. Similar to program managers, frontline staff require coordination and negotiation skills to work effectively with principals from other sectors. Those that will thrive will also possess true transformational leadership skills as opposed to traditional leader-manager skills, which includes strong interpersonal communication skills and an ability to engage others to share viewpoints, foster dialogue, and support problem solving to improve nutrition.

New ways of working with other disciplines

The modern day nutrition challenges may require multisectoral solutions suited to the local context and may include close collaboration with principals from many sectors, such as agriculture, food science, health, education, social protection, anthropology, engineering, and sanitation. In this transdisciplinary space, nutrition professionals need to be fluent in discussing the concepts and constructs of other disciplines to effectively engage with decision makers in other sectors and seize opportunities to influence policies and programs. Creating mutual understanding toward an aligned commitment takes openness, dialogue, and time to develop. Further, it is crucial that nutrition professionals directly interact with the community, because public interests can be powerful in shaping political decisions. Nutrition experts should therefore be confident and willing to educate and engage with those across different disciplines, from government, academia, civic society, the private sector, and the general public, as to the value of nutrition and the challenges faced in scaling up interventions.

To effectively function as part of a multidisciplinary team, the nutrition experts will need to create an aligned commitment among a diverse group to unlock people's potential so as to improve their performance and productivity toward achieving a common goal. Successful nutrition professionals will be those who can influence others and provide leadership by creating self-awareness, exercising strong interpersonal communication, transformational leadership principles, negotiation, and advocacy skills as well as an understanding of team dynamics, resistance to change, and team building.

Professionals will have to facilitate both horizontal (e.g., across sectors) and vertical (e.g., from national to district and community levels) coordination to effectively deliver nutrition services. For this, they will need to be adept at building and guiding multidisciplinary teams and ensuring that nutrition outcomes and impacts are prioritized or included, as is relevant, for the program and desired outcome.

Curriculum and credentials for development needs

Several key recommendations for revised program curricula for training and credentialing the new nutrition workforce emerged from the workshop. The group differentiated across the types of graduates in nutrition from those in doctoral programs to master of science/master of public health programs to vocational/certification programs. Participants agreed that any educational or training program must be guided by the needs of society and continually be updated to reflect the new and forecasted nutrition challenges. One obvious way to ensure that this is done is to provide students with practical and hands-on training through direct exposure to on-going nutrition interventions occurring on the ground (learning by doing). Action learning projects emerged as an important means to continually engage practitioners in translating knowledge into skills.

For those enrolled in formal nutrition programs, several areas of study emerged as being necessary, including nutritional biology and biochemistry, nutrition assessment, epidemiology, statistics, program management, analysis and writing, leadership, advocacy and negotiation, behavioral science, communication, and ethics. To foster multisectoral engagement and teamwork, those in formal nutrition programs should be required to include in their coursework classes in agriculture, food systems, environment, toxicology, ethnography, economics, climate change, and/or urbanization.

Formal education programs must ensure that their graduates are equipped with the necessary theoretical and practical skills to fill nutrition development posts. University staff must themselves be required to update their knowledge and skills to ensure that what is taught is both current and relevant. Reviewing and updating curricula is vital and could be accomplished either by embracing new hires to provide fresh perspectives on course development that complements existing modules or including online modules that broaden the curriculum. Academia and professional associations in high-income countries are ideally situated to build long-term collaborations with institutions in low- or middle-income countries to assist them in building and sustaining their domestic training capabilities. There is a dire need for existing, but remodeled, formal nutrition training programs to be scaled up to ensure there are sufficient relevantly trained individuals willing to work in vulnerable regions of the globe. The highly regarded African Nutrition Leadership Programme (ANLP)²⁷ has trained and created a network of some 325 professionals across 34 African countries in transformational leadership, but many more are needed (**Textbox 1**).

Informal education and vocational training of the nutrition workforce is important for those outside the net of formal education programs. Vocational and community schools can offer certification and short course trainings,

²⁷ Abbreviations used: ANLP, African Nutrition Leadership Programme; MOOC, massive open online course; SUN, Scaling Up Nutrition.

TEXTBOX 1 AFRICAN NUTRITION LEADERSHIP PROGRAM

The African Nutrition Leadership Programme (ANLP) develops transformational leadership capabilities in individuals and institutions aimed at improving the delivery of programs and services and at accelerating the impact of nutrition and nutrition-sensitive interventions.

The transformational leadership development programs offered include an annual 10-d intensive individual leader-focused program and tailor-made, needs-based programs that support institutions in the implementation of programs and policies at both the national and local level in Africa, with a focus on working in multidisciplinary teams.

To date the ANLP has 325 alumni networked across 34 African countries. In addition, the ANLP is currently developing a group of 20 master trainers, drawn from the alumni, which will further increase its capacity to develop institutional leadership capabilities on the continent in both Anglophone and Francophone countries. Current activities include leadership development programs in Zambia, Uganda, Rwanda, and South Africa.

Content covered by the programs include, among others, change leadership, self-awareness, communication, value-driven teamwork, team effectiveness, managing resistance to change, advocacy, organizational diagnosis, self-management, results-oriented action planning, gaining stakeholder commitment, and continued personal and institutional growth and development.

but more frequent and more in-depth opportunities to build both applied program and teamwork skills should be provided. This could take the form of expanded on-the-job trainings, network meetings to build skills, massive open online courses (MOOCs) or case studies. Certified refresher courses and employment links could also be offered to the workforce. Coordinating bodies for informal nutrition training are necessary not only at the national level but also at the province, district, and community levels. Community health workers and other frontline workers would be more likely to take on the shorter trainings and local vocational schools. The challenge is the development of course material that is relevant, well-managed, and maintained.

To ensure that formal and informal education programs in nutrition are performing to standard and sustained in the future, the following were recommended as part of creating organizational, institutional, and systemic support for the development of individual capacity. United Nations agencies can meet a crucial need by providing technical support for university educational and training programs. The World Food Program, the United Nations Children's Fund, and Helen Keller International were noted as having the potential to institutionalize training on certain topics and skills. The Scaling Up Nutrition (SUN) and other cross-national initiatives should include investments in continuing education for nutrition. Moreover, the SUN, through facilitating cross-sector engagement, has a unique opportunity to foster networks for program managers and frontline staff for greater sharing of experiences and lessons. More broadly, those entering the nutrition workforce need to be confident that they will have a career with opportunities for advancement and remuneration. Because many positions within the nutrition field are temporary consultancies, this was a noted challenge. The involvement of the national universities and the creation of South-North and South-South academic and scientific exchanges will be a key driving force for developing appropriate curricula

and competencies that match social, cultural, and physical environments.

Advocacy and leadership

Leaders (**Textbox 2**) within the nutrition community struggle with how to use narratives and storytelling and to transfer knowledge and skills that both motivate and assist community leaders and potential nutrition champions to effectively influence and change policymaking. Advocacy training is not a theme that is institutionalized within most organizations or training programs. Nutrition professionals often lack guidance on how and when to engage champions and policymakers, what tactics to use, and how to balance potential conflicts of interest. If this training and learning does take place, it is often ad hoc, taught by managers on-the-job. Managers are usually not directly incentivized to provide advocacy training to their team members.

Skills, such as relationship management, giving compelling presentations, communications, and advocacy, are needed to effectively influence policymaking and should be institutionalized within organizations and incorporated into nutrition education and training programs at universities. But, similar to the above-mentioned recommendations for curricula, any postgraduate or continuing education training that is developed should be grounded in practical application and should incorporate opportunities to learn-by-doing. Communicating for influence and advocacy is often more art than science that is developed over time and gained through repeated experiences.

Potential training components for high-impact communications, influencing and obtaining stakeholder buy-in might include the following: 1) preparation: policy and stakeholder analysis and assessment and understanding implications of policies on nutritional outcomes (both positive and negative as well as neutral); 2) understanding of the political economy and languages of other sectors (finance, agriculture, etc.); 3) understanding target audience needs, incentives, and awards so as to be able to proactively guide them in making nutrition

TEXTBOX 2 LEADERSHIP

We need transformational leaders through the whole spectrum, from community level to political level. It is important to recognize that leadership is not a position, it is something you do, an action. These will be the leaders who inspire stakeholders to act beyond self-interest. They will be the role models acting with energy and enthusiasm and will build trust while constantly communicating the shared vision. These leaders will be innovative and creative and will have a strong people orientation committed to developing and empowering teams and organizations at every level.

It also seems clear that one is unlikely to find all of this in one person or even one organization. Many elements of the body of knowledge, information, attitudes, orientations, skills, capabilities, and actions to make this happen already exist, and many parts still need to be developed. This requires both a top-down and a bottom-up approach and above all a variety of transformational leaders at all levels and in all sectors.

related decisions; 4) building and delivering influential presentations; and 5) leveraging partners to deliver and reinforce messages and creating buy-in and ownership of other nutrition-sensitive programming actors.

There should be a focus on teaching nutrition managers and leaders how to effectively use narratives and storytelling to influence nutrition leaders and to help them understand the implications of nutrition policies. The nutrition expert of the future will need skills to generate multisectoral collaboration. Training is needed to both respond to policy-maker concerns and to proactively guide them to make better nutrition-relevant decisions.

There are immediate opportunities to provide training to the current workforce, with a focus on mid-level managers or rising leaders through leveraging online platforms or MOOCs, which could be adapted for in-person facilitation and tailored to organizational needs. Again, mentoring was also highlighted as a promising approach that could support the transfer and development of these soft skills. (This is of course assuming there are good mentors available. Mentoring expertise exists among today's nutrition professionals, but the nutrition community should consider bringing in the expertise from other fields.) University and program leaders should seek and create opportunities within their

TEXTBOX 3 KEY NEXT STEPS STEMMING FROM THE CASTEL GANDOLFO WORKSHOP

1. Initiate a *North-South and South-South Global Nutrition Consortium of Universities* to meet, discuss, and formulate a universal core set of competencies and curricula for the nutritional professional who does research and development in the context of post-2015 challenges and opportunities. This would involve initially, an exercise to map current gaps and to predict future needs of a nutrition professional workforce so that training institutions also start to offer courses and revised curricula that will support these needs. This mapping would require us to think about nutrition careers beyond nongovernment organizations and academics and also to engage the private sector, as a potential area of growth for many working in food, agriculture, and nutrition.
2. Design an affordable *“Executive Training” Workshop* that would consist of a series of short-term trainings for those working in nutrition at national and subnational levels that focuses on the soft skills necessary for creating an enabling environment for nutrition in their respective countries. Skills would include advocacy, talking to different disciplines, budgeting, managing large-scale programs, and policy formulation.
3. Promote already existing *Open-Access Nutrition Specific and Sensitive MOOC*,¹ essentially a 101 on nutrition-sensitive approaches, involving experts from other fields who provide lessons on the core objectives of their sector, basic terminology, and sessions on what the sector brings to nutrition.
4. Develop and expand existing intensive *Nutrition Summer Workshops* for development practitioners and program managers to attend. These workshops would focus on understanding current evidence that stems from scientific articles, interpreting research and studies, learning how to develop implementation science projects, translating science into action, and developing monitoring and evaluation principles.
5. Build and use *Technology-Driven Platforms*, such as community participatory videos, applications, and social networking to empower local communities and frontline workers and to create home-grown nutrition champions.

¹ The UK Department for International Development and Irish Aid have supported the London School of Hygiene & Tropical Medicine to deliver two MSc-level open-access online training modules MOOCs called: Programming for Nutrition Outcomes and Agriculture, Nutrition and Health. By June 2015, these modules had been accessed by over 30,000 people in over 150 countries. <https://ble.lshtm.ac.uk/course/view.php?id=26> and <https://ble.lshtm.ac.uk/course/view.php?id=1700>.

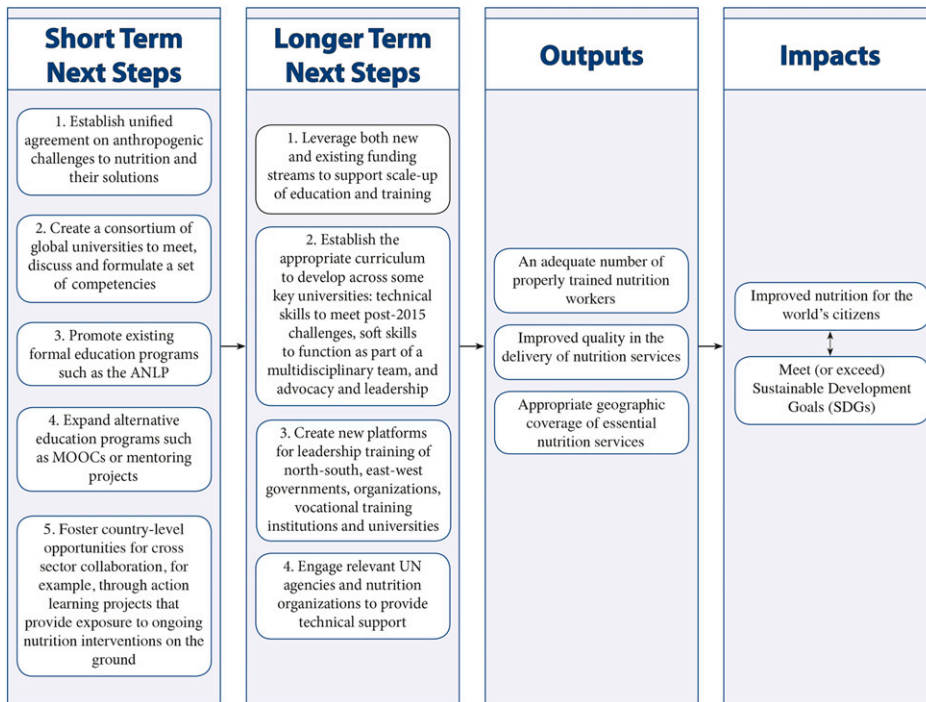


FIGURE 1 Short- and long-term steps of the potential beginnings of a road map. ANLP, African Nutrition Leadership Program; MOOC, massive open online course.

institutions to integrate communications and advocacy knowledge and skills sets.

We highlight workshop recommendations for strengthening capacity in **Textbox 3**.

Discussion

The assessments of capacity in nutrition to date highlight the global shortages, in quality, quantity, and geographic coverage, of an effective workforce for nutrition in the post-2015 world. Calls for investment in capacity development in nutrition are not new, but the present call is renewed and distinguished from others in the face of mounting external pressures on the delivery of successful nutrition-specific and -sensitive services. Contributing to the already demanding challenge of addressing malnutrition are the current and anticipated issues that will contribute to a shift in the global burden of disease, both in type and locus, leading to an increase in food insecurity, changing food environments, and new pressures on the health system.

Despite substantial progress made in bringing nutrition interventions to scale, the Castel Gandolfo workshop highlighted important gaps and expanded on previous assessments on capacity development. The inability to effectively translate scientific knowledge to action on the ground echoes the sentiments of Alan Berg as early as 1993 (30). The notion that the field of nutrition lacks a focus on a skill set that encourages problem solving in multiple, diverse settings (i.e., a nutrition engineer) still holds true today. The outcomes and recommendations from the Castel Gandolfo workshop can inform future education and training of the workforce, especially in high-burden regions, such that evidence-based nutrition-specific interventions can be implemented, and nutrition-sensitive interventions can be better supported and evaluated in the future.

These curricular recommendations for graduates in the nutrition field align with previously published recommendations (13, 31, 32). Although the workshop highlighted content area requirements for formal and informal training programs, it did not specify competencies of individual graduates in each instance. Because competency-based programs can be contentious, we charge local academic institutions and organizations to create competencies that match their own unique needs and setting.

The lack of multisectoral collaborations to alleviate malnutrition is well documented in the literature (33, 34). Our recommendations highlight the importance of training individuals to work as part of a multidisciplinary team, engage with decision makers, and advocate for nutrition, which align with those of other investigators (33, 35). This also reflects the need to target malnutrition at its upstream causes, and a trend in reforming the education of health professionals to reflect a local-global synergy and systems-based thinking (19). The approaches we highlight for training and education align with those suggested by the Lancet Commission on the education of health professionals (19). We recognize that measuring the success of these recommendations requires a research agenda that prioritizes capacity outcomes, as suggested by Gillespie et al. (15). Also critical is a focus on interdependence in education, which includes considerable planning at the organizational level to create networks, alliances, and consortia between global institutions and universities to foster the development of a workforce for nutrition (19, 23).

One limitation effecting the workshop recommendations is the gap of organizational capacities for training and education of the workforce (e.g., organizational level of capacity) and the laws, policies, and systems that govern the process (e.g., the systemic level of capacity). It is clear that

the goal of educating and training a workforce must be institutionalized, but the lack of specific real-world examples of this from which to learn hampers our recommendations. The SUN movement, the African Nutrition Leadership Programme [and a similar program initiated in Northeast Asia in 2008 (29)], and key United Nations institutions and donors were acknowledged as important for institutionalizing and financing capacity development initiatives and facilitating the development of interdisciplinary capacity to build training collaborations with academic institutions in high- and low-resource nations. Although an attempt was made to include participants from all sectors and areas of expertise, a future convening of this group should include an even broader range of stakeholders to overcome these limitations.

A second limitation is that diagnosing the gaps is an essential activity but probably also the easier part. A large component of the solution lies in our ability to conceptualize the co-contributing factors and potential solutions and relations between them as part of a complex adaptive system. This may help us cope with the complexity and the fact that we are dealing with polarities (dilemmas) whereby the solution is not to choose between options but rather to manage the development and implementation of a range of the most-effective solutions at various levels.

A third limitation is that during the workshop there was less discussion about what it would cost and what concrete partnerships are necessary to build a workforce for nutrition in both formal and informal education sectors. There was a discussion of having a second follow-up workshop to create a road map, and other global gatherings have also stressed this need. This road map should serve as an action plan that details costs, partners, short- and long-term actions, and geographic focus. This should be accompanied by potential sources of donors that could commit to funding workforce capacity. Both short- and long-term steps of the potential beginnings of a road map are shown in **Figure 1**.

Capacity development will remain a critical feature of nutrition and development agendas in the coming decades. The Sustainable Development Goals offer an opportunity to excite, inspire, and guide the world in the post-2015 era. As the specific goals and targets shape-up, it is critical that advancing good nutrition be recognized as an underlying and crosscutting prerequisite to promote sustainable development. To maximize the impact of investments in nutrition, we must intensify efforts to develop the capacities of the future workforce for nutrition; failure to do so will render the well-meaning goals and targets of the future unattainable.

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