

Incorporating Life Course Theory and Social Determinants of Health into the LEND Curriculum

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Published online: 14 July 2013
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Abstract The goal of this paper is to describe strategies for revising LEND curricula to incorporate a stronger focus on life course theory and social determinants of health (LCT/SDOH). The Maternal and Child Health Bureau (MCHB) includes a central focus on LCT/SDOH and states that a goal of Maternal and Child Health (MCH) training is to “Prepare and empower MCH leaders to promote health equity...and reduce disparities in health and health care.” Two LEND programs engaged in a comprehensive process to strengthen LCT/SDOH in their curricula that included choosing content and themes and developing instructional strategies congruent with MCH Leadership Competencies and with the learning needs of LEND trainees. We describe: key elements of LCT/SDOH; the relationship of these to children with disabilities and to the MCH

Leadership Competencies; LCT/SDOH resources for the LEND curriculum; a collaborative curriculum revision process for faculty; and LCT/SDOH content and themes for the LEND Curriculum and strategies for incorporating them. We present the results of our work in a format that may be used by other LEND programs undertaking curriculum revision to incorporate LCT/SDOH.

Keywords Life course theory · Social determinants of health · LEND program curriculum · Developmental disabilities · MCH leadership competencies

Background

Leadership Education in Neurodevelopmental and related Disabilities (LEND) Programs are funded by the Maternal and Child Health Bureau (MCHB) to “improve the health of children who have, or are at risk for, neurodevelopmental or related disabilities by preparing trainees from a wide variety of professional disciplines to assume leadership roles...” [1]. The forty-three LEND programs provide opportunities for future leaders who will work with and on behalf of children with disabilities and their families in clinical, research, teaching/training, and policy/advocacy realms. LEND Programs assist trainees in working toward the MCH Leadership Competencies [2].

The Maternal and Child Health Bureau is developing a new strategic plan in which life course theory (LCT) and social determinants of health (SDOH) figure prominently. MCHB expects LEND programs to include LCT/SDOH in their curriculum and requires them to incorporate measurable educational objectives concerning these frameworks [3].

Interdisciplinary LEND faculty at two LEND programs have collaborated to strengthen existing LCT/SDOH

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curriculum components and to incorporate new relevant elements into the program curriculum. This paper, which reflects our 2-year experience and continuing process, reviews important background related to this effort: key elements of LCT/SDOH, the relationship of these models to developmental disabilities in particular, the central role of family-centered care, and the relationship between MCH Competencies and core LCT/SDOH concepts. We describe specific activities undertaken to prepare, plan, and implement curricular adaption and expansion; and an array of resources and educational activities that all LEND programs may take advantage of for this important work.

Key Issues of LCT and SDOH

The *National Strategic Plan for Maternal and Child Health (MCH) Training 2012–2020* has as one of its central goals to “Prepare and empower MCH leaders to promote health equity...and reduce disparities in health and health care [4].” To provide effective leadership to advance health and well-being of children with disabilities and their families, LEND graduates must possess in-depth knowledge of LCT and of SDOH and must be skillful in its application to practice, policy, and research, with the goal of decreasing health disparities. Some elements of the LCT/SDOH conceptual framework are already incorporated into the curriculum of LEND Programs. Recent research, efforts to apply research evidence to systems and populations to improve child health and decrease disparities, and MCHB’s strong focus on LCT/SDOH in developing its next strategic plan require us to scale up our efforts to incorporate these concepts into the LEND leadership training curriculum [5].

The central concepts of LCT/SDOH and how they apply to the MCH Strategic Plan, including training of MCH leaders, have been reviewed by Fine and Kotelchuck in *Rethinking MCH: The Life Course Model as an Organizing Framework* [6], and six relevant key concepts are summarized as follows. **Timeline** refers to continuity of experience and influences, and cumulative impacts over time. **Timing** reflects the importance of the earliest experiences and exposures and of critical periods throughout life. **Environment** recognizes the importance of family and community and the impact of systems in shaping health. **Equity** refers to the importance of addressing life circumstances that lead to disparities in health and development. **Potential** is the notion that the influence of early adverse experiences may be modified when opportunities and support are provided for all to reach full capacity for health and well-being. Finally, **Risks and protective factors** are those events and statuses that either improve health and contribute to healthy development, or diminish health and create barriers to reach full developmental potential.

Social determinants of health are elements of the “broader environment”—the circumstances in which people are born, grow up, live, work, and age, as well as the systems put in place to deal with illness and disability. Key social determinants of health include education and income, housing adequacy, air quality and other environmental influences, and health care coverage. These circumstances are, in turn, shaped by a wider set of forces: economics, social policies, and politics [7, 8].

Relationship Between LCT/SDOH and Developmental Disabilities

The definition of child health developed in the 2004 report, “Children’s Health, a Nation’s Wealth” applies across the ability spectrum: “Children’s health should be defined as the extent to which individual children or groups of children are able or enabled to (a) develop and realize their potential, (b) satisfy their needs, and (c) develop the capacities that allow them to interact successfully with their biological, physical, and social environments [9].” Thus, neurodevelopmental conditions are implicitly included in health outcomes, yet for LEND training purposes it is helpful to understand the specific application to disabilities as well as the issues that are raised in the process. LCT/SDOH can be seen as related to developmental disabilities in at least four broad ways.

First, conceptualization of disability has evolved over recent years to define disability as resulting from the interface of the individual and the environment rather than as intrinsic to the individual. The 2011 World Health Organization’s *World Report on Disabilities* notes: “There has been a paradigm shift in approaches to disability. In recent decades the move has been away from a medical understanding towards a social understanding. Disability arises from the interaction between people with a health condition and their environment [10].” Halfon et al. suggest that disability is “a manifestation of the interaction between individuals and the context in which they live. Instead of a simple dichotomy, disability is understood as a dynamic continuum, influenced by biology, social factors, environmental conditions, health services, and personal preferences.” They offer this definition of childhood disability: “A disability is an environmentally contextualized health-related limitation in a child’s existing or emergent capacity to perform developmentally appropriate activities and participate, as desired, in society [11].”

Secondly, there is a large and growing body of evidence concerning the influence of social determinants on cognitive and emotional development of children and the impact of early and evidence-based interventions on developmental outcomes [12, 13]. Thirdly, the unremitting gap in health status and prevalence of disabilities across income

groups emphasizes the influence of SDOH on cognitive, social, and emotional development [11, 14]. Finally, the increase in prevalence of developmental disabilities [15] at a time period when other indicators of child health have improved prompts consideration of the impact of adverse social, economic, and environmental circumstances on developmental progress [11].

However, viewing developmental disabilities through the LCT/SDOH lens prompts discussion and exploration of several areas of possible controversy. While researchers and theorists create promising new evidence on plausible biological mechanisms for early adversity's impact on cognitive, social and emotional development, others caution against an overly deterministic interpretation of the results, pointing to evidence of the positive impact of early interventions [6, 16–18]. Additionally, a conceptual model that includes prevention of disabilities inevitably prompts consideration of whether it is in conflict with valuing lives lived on all points along the ability spectrum. This is not a conversation to be avoided, but should be included in the training curriculum.

Overall, incorporating consideration of LCT/SDOH broadens the scope of the LEND curriculum to include how social circumstances impact on development of all children and prompts consideration of a “double jeopardy” of differential impact of adverse circumstances on children with developmental disabilities [19–21].

Relationship of LCT/SDOH to the MCH Leadership Competencies

Recently, Koh and Nowinski [22] described essential qualities of leaders who will eliminate health inequities, stating that they must integrate “science, practice, and policy across disciplinary borders,” “embrace this ambiguous interdisciplinary world,” and employ “supreme interpersonal skill” to “communicate effectively to motivate for a higher purpose.” Citing the 2008 Report of the World Health Organizations Commission on Social Determinants, they call for leaders who “heed the explicit call to address health inequities through a social determinants approach [22].”

The *MCH Leadership Competencies (v 3.0)* [2] is the framework on which the LEND program curriculum is built to develop leaders with such essential leadership qualities, knowledge, and skills. The Competencies are in twelve domains: (1) MCH Knowledge Base; (2) Self-Reflection; (3) Ethics & Professionalism; (4) Critical Thinking; (5) Communication; (6) Negotiation & Conflict Resolution; (7) Cultural Competency; (8) Family-Centered Care; (9) Developing Others Through Teaching & Mentoring; (10) Interdisciplinary Team Building; (11) Working with Communities & Systems; and (12) Policy and Advocacy. Rather than creating a separate set of LCT/

SDOH competencies, we have integrated essential knowledge, skills, and values into the existing framework of the *MCH Leadership Competencies*. The competencies are defined broadly enough to accommodate new knowledge and strategies in the field as well as additional skill sets required for MCH leadership.

It is important to note that the *MCH Leadership Competencies* describe knowledge areas that are directly related to LCT/SDOH and skills that MCH leaders require to apply LCT/SDOH in practice, research, and policy. Examples of specific language from the competencies that reflect this are provided in a table posted at the AUCD Life Course Perspective page: <http://www.aucd.org/template/page.cfm?id=792>.

Relationship of LCT/SDOH to Family-Centered Practices

Family-centered care is one of the MCH Competencies that guides LEND training and relates strongly to LCT/SDOH because the family is the environment in which children grow and develop. MCHB defines family-centered care as ensuring the health and well-being of children and their families through a respectful family-professional partnership that includes shared decision making. It honors the strengths, cultures, traditions, and expertise that everyone brings to this relationship. Historically, in the field of MCH, the concept of family-centered care was developed by parents, advocates, and health professionals concerned for children with special health care needs (CSHCN). As we move forward to integrate LCT/SDOH into LEND training, family-centered practices remain central.

Families of children and youth with developmental disabilities and other special health care needs are influenced at all life stages by their own unique life experiences and culture, the nature and extent of their child's disability and health care needs, access to natural supports and formal services, family advocacy and partnerships with professionals, and opportunities for enhanced family quality of life. Overall family health and well-being is a key factor in addressing children's health care needs, and it serves as a determinant that directly impacts on family quality of life. Park, Turnbull and Turnbull have framed this as: the family quality of life domain of health includes a family's health status, health care, and health impact; the impacts of poverty on health relate to hunger, under-nutrition during pregnancy, and limited access to health care [14]. Since family quality of life is linked to health disparities, improving family quality of life by using family-centered models of health care service delivery and providing family supports will likely result in decreasing health disparities.

The family empowerment/family quality of life model describes families, friends, community citizens, and

professionals collaborating to enhance environments at multiple levels (family, services, community, society, culture). In LEND programs, trainees can explore how this model correlates with social determinants of health across the lifespan and in other life areas.

Key concepts of family-centered practices as described by Hanson and Lynch [23] also illustrate examples of a connection between this competency and LCT/SDOH and can be included in LEND training. In their framework, family-professional partnerships require that professionals acknowledge and respect each family's strengths, culture, language and ability to make decisions that are "right" for that family. Family decisions may differ from those that professionals would prefer, but they are to be respected as the family's decisions. They further describe that all families have strengths. At times, those strengths are overshadowed by difficulties that the family or an individual family member is confronting, but these strengths may be marshaled at another time in the family's life cycle. Finally, families' lives are influenced by their socio-cultural, economic, and political environments that may include non-supportive and destructive factors. Professionals are responsible for assisting families in understanding and negotiating these influences in ways that give families more control.

Strategies

An interdisciplinary group of LEND Program leadership and core faculty at two LEND programs have worked for two years on strategies to include LCT/SDOH in the LEND curriculum. The programs, located at Cincinnati Children's Hospital Medical Center/University of Cincinnati in Ohio and at the Westchester Institute for Human Development/New York Medical College in New York, have worked closely on several aspects of the LEND curriculum. In addition, one of the authors participates in the Life Course Curriculum workgroup of AUCD.

The characteristics of our two LEND Programs and their institutional locations and affiliations illustrate the variety in settings and program structures that is a strength of the LEND network: one is set in a large public university and children's hospital and the other in a university-affiliated not-for-profit organization. Both programs train 20–25 LEND trainees per year with over 300 hours of LEND Program involvement.

Our overall approach to curricular revision had the following components: prepare faculty with knowledge about LCT/SDOH; provide opportunities for faculty to discuss the interrelatedness between key concepts of LCT/SDOH and LEND training and to consider issues involved

in instructing adult learners in applications of complex theoretical models; and implement new and revised curriculum elements and assess their impact.

We acknowledged that revising the LEND curriculum to incorporate new knowledge and theories presents challenges. First, programs have limited ability to expand curriculum hours and must incorporate new knowledge and skills by integrating them into the existing curriculum. Second, research concerning LCT/SDOH is rapidly expanding, requiring faculty to update their knowledge, and thus creating something of a "moving target" for curriculum revision. Many valuable resources that provide content for LCT/SDOH training curriculum are available on-line, but there is not a cohesive literature on curriculum development on LCT/SDOH per se. However, the MCHB-funded nutrition leadership education and training programs recently included discussion of incorporating the "Life Course Model" into nutrition leadership training using the example of obesity [24]. We believe this is the first systematic description of an approach to incorporating LCT/SDOH content in new or revised curriculum for LEND Training.

Faculty Curriculum Collaboration and Trainee Input

The process of strengthening the LCT/SDOH focus of our LEND Programs, and of enhancing the leadership training that will produce leaders skilled to apply the theory, began with faculty collaboration on preparation. The rapid evolution of LCT/SDOH science, and its cross-disciplinary nature, may cause faculty to be concerned about their ability to incorporate it meaningfully and to teach it [25], thus, faculty preparation is especially important for this content. We found that revising the curriculum is not a one-step process but requires repeated cycles of discussion, reading, reflection, development and incorporating revised or new curriculum elements, and discussing the feedback. In addition, many disciplines have parallel models or paradigms that have been incorporated into professional training and research for some time. An example is in child clinical and development psychology where the *developmental psychopathology* model is employed. Developmental psychopathology is an interdisciplinary scientific field with the goal of investigating the interrelationship among biological, psychological, and social-contextual domains of typical and atypical development across the life course [26]. In psychiatry, social work, and health psychology, the biopsychosocial model has been promoted since George Engel's conceptualization in the late 1970s [27].

In our two programs the first steps in faculty preparation included one or more meetings of the core LEND faculty either during regular sessions of the LEND Curriculum Committee or as additional faculty development

workshops. Eighteen LEND faculty from eleven disciplines participated over a two year period. Our goals for these meetings and the activities involved are described next.

Goal 1: Faculty become familiar with the key elements of LCT/SDOH and their relationship to developmental disabilities and to the LEND curriculum The facilitator: (1) provides a review of LCT/SDOH and of the online resources (such as: AUCD’s Life Course Perspective page at <http://www.aucd.org/template/page.cfm?id=768>; MCH Life-Course Teaching Resources at <http://mchb.hrsa.gov/lifecourse/teaching.html> and the Life Course Research Network at <http://mchb.hrsa.gov/lifecourse/research.html>); (2) discusses the rationale for implementation of these models at this time; and (3) gives an overview of key instructional features intrinsic to bringing any new material to LEND: adult learning methods, incorporating input and feedback from trainees, matching pace and content to the learner, and how content must be interwoven with skills, attitudes, and values.

Goal 2: Faculty identify how to integrate LCT/SDOH into the LEND curriculum The faculty: (1) reflect on the relationship of LCT/SDOH to their own content and instructional expertise on childhood disabilities (during the workshop, *but also* as an important individual reflective exercise afterwards); (2) identify elements of LCT/SDOH already incorporated into the training program and elements that are not addressed or are minimally included; (3) discuss strengthening of incorporation of LCT/SDOH into key training elements and trainee evaluation; and (4) plan follow-up meetings to assess progress.

To assure that curriculum revision and development would meet trainee needs, faculty combined their own understanding of trainees’ level of preparation for learning about LCT/SDOH and direct input from trainees. Trainees from a wide variety of disciplinary backgrounds participate in LEND and bring richly diverse perspectives. Most trainees are in the early phase of developing disciplinary expertise and disabilities-specific knowledge and skills. Thus, they may have a general awareness of certain elements of LCT/SDOH but may not be aware of theory and the supporting evidence.

Trainee input from both the national and local levels has been incorporated in the process. In 2010, trainees were surveyed nationally for MCHB’s “Prelude to Strategic Planning [28]”. They suggested strengthening several curriculum areas that we recognize as related to LCT/SDOH including policy and advocacy issues, coalition building, and reducing health disparities. Trainees also suggested that strengthening communication among the national network of trainees would be beneficial.

We obtained input from our own trainees through small group discussions during LEND sessions or during evaluation and planning sessions with trainees. These discussions helped us to understand: where they recognize elements of LCT/SDOH already incorporated into the curriculum; how they would strengthen opportunities to acquire LCT/SDOH knowledge and skills; learning experiences that they find highly motivating concerning systems change, policy and advocacy; and where they see possible mismatches between LCT/SDOH and what they see in everyday clinical practice.

In fall of 2011, twenty LEND trainees at one of our programs were asked, after learning about LCT/SDOH, to post to a discussion board about how they see LCT/SDOH applying to their daily work with children and families. The most frequent themes in their responses were: family partnerships and family-centered care; early screening and diagnosis leading to early intervention; awareness of the child and family’s socioeconomic circumstances; and the impact of environment on the children and families with whom they work. This exercise and other opportunities to discuss LCT/SDOH revealed that in some fast-paced clinical settings trainees observe practices that are not optimal for incorporating LCT and awareness of SDOH into clinical work. We also heard from some trainees that awareness of the strong impact of social factors and their seeming intractability, unless combined with sound strategies to effectively approach them, may lead to frustration, burnout, and reluctance to work with populations who experience difficult social circumstances.

Based on this process, we created six **content areas** and **themes** that integrate theory and scientific evidence concerning LCT/SDOH in a manner that is responsive to the learning needs of trainees at their stage of professional development.

Content Area 1, impact of adverse life circumstances on the health, development, and well-being of children and their families, may be integrated into the curriculum through use of the following themes:

- Measures of child well-being and what they tell us, in general, about child well-being in the US and about the well-being of children with disabilities and their families
- Multiple risk factors and how they combine to influence health and development: food insecurity, homelessness, poverty, unsafe environment, racism, low quality education and childcare, and inadequate health services and related supports [6]
- Interaction of social and biological influences on health; impact on developmental and emotional health [29–31]

- Risk of poor child health outcomes increases with number of negative social risk factors [31]
- Theory and research concerning how adversity affects children's health and development [16–18]
- Poverty's influence on children and families
 - Prevalence of poverty; health status and access across income strata
 - How poverty manifests in our work with children and families
 - Differential impact of poverty on children with disabilities and families [14, 20, 21]

Content Area 2, protective factors related to child development over the life course act in a complex interplay with risk factors, may be integrated into the curriculum through use of the following themes:

- Pre-term birth and low birth weight
 - Risk and protective factors related to income, education, and occupational class and by racial/ethnic subgroup [32]
 - Impact on development and other health outcomes [33]
- The evidence-base for home visiting programs [34]
- Protective factors that improve health and contribute to healthy development: nurturing family, safe neighborhood, positive relationships, economic security, access to quality health services and related supports, access to high quality early care and education [6]
- Impact on health of “complex interplay of ...biological determinants with social and family relationships, environmental influences, and broader social and economic context over the life course.” [5]
- Use of data to illustrate these influences; reports such as “Child Risk and Protective Factor” profiles at the Data Resource Center for Child and Adolescent Health (<http://www.childhealthdata.org/learn/NS-CSHCN>)

Content Area 3, elements of the broad environment in which children and youth develop, with family as the central element, may be integrated into the curriculum through use of the following themes:

- Family supports should link directly to family quality of life issues and reflect the importance of family empowerment and family-centered practices [23, 35–37]
- Financial and care-related issues that impact families of children with special health care needs
- Use of data to describe these influences: state profiles showing how inadequate insurance and other financial and care-related issues impact the families of children with special health care needs (from the Data Resource

Center on Child and Adolescent Health) (<http://www.childhealthdata.org/action/databriefs/family-to-family-profiles>)

- Impact of environmental toxins on neurodevelopment [11, 38]

Content Area 4, disparities related to children with and at risk for disabilities and their families and the central role of cultural competence in eliminating disparities, may be integrated into the curriculum through use of the following themes:

- Personal and institutional cultural competence and its role in providing equitable access and eliminating disparities in outcomes
 - Resources for cultural competency assessment and development at the National Center for Cultural Competence (<http://nccc.georgetown.edu>)
- Disparities in prevalence of developmental disabilities, age of diagnosis of ASD, and differences in likelihood of ASD diagnosis across racial and SES group [15, 39, 40]
- Influence of racism on inequities in health outcomes [41]
- Impact of social factors on mental health of youth and young adults with disabilities [42]

Content Area 5, the importance of timing in screening, diagnosis, and intervention for children with and at risk for developmental disabilities and their families, may be integrated into the curriculum through use of the following themes:

- “Early identification of developmental disorders is critical to the well-being of children and families.” [43]
- Evidence base for early educational intervention [44]
- Importance of early and ongoing social-emotional screening for infants and toddlers [37, 45]
- Importance of timely screening for and treatment of mental health conditions in children and youth with developmental disabilities [46]

Content Area 6, strategies to support all children and youth in reaching their full potential for health and development, may be integrated into the curriculum through use of the following themes:

- Services and supports to optimize transitions throughout all phases of life to improve health and community inclusion in later phases
- Importance of integrating transition across health and education realms
- Importance of the medical home in supporting successful transitions at all stages of life (Got Transition?: <http://www.gottransition.org/>; Center for Medical

Home Improvement: <http://www.medicalhomeimprovement.org/>); Medical Home Competencies for LEND Trainees [47]

Specific Instructional Strategies to Incorporate LCT/SDOH into the LEND Curriculum

The next step was to develop instructional strategies to integrate the content. In developing a curriculum for adult learners, we keep in mind the wisdom of William Butler Yeats: “Education is not the filling of a pail but the lighting of a fire.” Effective LEND training takes into account that adults are most interested in knowledge and skills that have immediate relevance to work or personal life and in learning that is problem-centered rather than content-oriented. Social or collaborative learning methods are in line with these principles and have been demonstrated to improve student success [48]. Collaborative formats for learning not only increase retention of learning but also provide opportunities to build collaboration skills [49].

Therefore, learning experiences that integrate LCT/SDOH content and themes should be designed to familiarize LEND trainees with conceptual models, impart skills for seeking out and evaluating relevant resources and research, and motivate further learning, rather than to create exhaustive inventories of knowledge to be memorized. Furthermore, since most LEND trainees are in a phase of professional development during which the goal of clinical competence predominates, it is especially important to help trainees conceptualize implications of LCP/SDOH for daily work with children and families. Opportunities therefore can be created for active and collaborative learning and for reflection on application of new knowledge to policy and practice and these can be focused in different contexts. The first context is activities that can be conducted during regular trainee group meetings, using materials available on the AUCD website Life Course Perspective Page. Examples are: trainees take the Health Equity Quiz and then discuss answers and findings in class or via discussion board; conduct case discussions using “Interdisciplinary Case Studies” available on the website page; use “Social Stressors and Difficult Life Circumstances” worksheet to stimulate discussion during a LEND session concerning how adverse circumstances may manifest in the clinical encounter and how professionals can support families in this situation; and play the Life Course Game (<http://www.citymatch.org/lifecoursetoolbox/gameboard.php>) in class and discuss the process.

In the context of projects and assignments that may already be part of the LEND training, these can intentionally be carried out in interdisciplinary teams so that trainees learn from the perspectives of their classmates. In

the same way, projects can specifically include family members who bring their own perspectives that integrate key Life Course concepts. Finally, trainee projects can be required to include consultation from outside experts, policy partners, and community members.

A final context is to recognize opportunities, during daily work with children and families, for reflection on and discussion of application of new LCT/SDOH knowledge. The same holds for discussions that may occur regarding the trainees’ future leadership roles.

Incorporating LCT/SDOH into the curriculum may be accomplished through either adding new elements focused specifically on LCT/SDOH, or by weaving LCT/SDOH into the existing LEND curriculum. In addition, the evaluation tools used to assess trainee skills and knowledge must incorporate assessment of these new or revised curriculum elements. Although there is limited capacity in most LEND programs to add on a large number of new elements, there is value in adding selected new elements concerning LCT/SDOH to anchor trainee learning about LCT/SDOH throughout the year. In Table 1 we provide examples of instructional strategies of both types related to selected MCH Competencies. These are not meant to be a complete inventory but rather a selection of strategies we have already employed and strategies that are planned.

Experience to Date and Next Steps

An MCH leader “...continually seeks new knowledge and improvement of abilities and skills central to effective, evidence-based leadership [and]... is responsive to the changing political, social, scientific, and demographic context and demonstrates the capability to change quickly and adapt in the face of emerging challenges and opportunities [2].” By undertaking our first steps to embrace LCT/SDOH as a new challenge and opportunity, LEND programs around the country are helping to assure that tomorrow’s leaders working with and on behalf of children with disabilities and their families will be prepared to serve in this fashion.

Challenges and Successes in Implementation and Lessons Learned

Overall, trainees and faculty at our two locations have been satisfied with the newly incorporated and revised curriculum elements concerning LCT/SDOH as assessed by informal faculty feedback and through written evaluation and small group discussion with trainees. As noted previously, trainees at both programs have recognized LCT/SDOH as highly relevant to their work with children and families. Faculty easily recognized the importance and

Table 1 Strategies for incorporating LCT/SDOH into the LEND curriculum for selected MCH competencies and for clinical supervision*1. MCH Knowledge Base*

Offer dedicated anchoring sessions or assignments on key LCT/SDOH concepts and evidence related to children with disabilities and families:

- Lecture by LEND faculty or guest expert on a LCT/SDOH Content Area theme
- Trainee self-study followed by written assignment or class discussion, for example:
 - Read a suggested reference from the six LCT/SDOH Content Areas
 - View selected webinar on AUCD Life Course Perspective Page (<http://www.aucd.org/template/page.cfm?id=768>) or MCH Navigator (http://navigator.mchtraining.net/?page_id=149)
 - Utilize elements of the “Life Course Perspectives on Health” course at the “JSPH Open Courseware” site of the Johns Hopkins Bloomberg School of Public Health (<http://ocw.jhsph.edu/courses/lifecourseperspectiveonhealth/index.cfm>)

Weave LCT/SDOH into existing curriculum elements:

- In lectures/discussions of conditions and diagnoses:
 - When discussing incidence, prevalence, and age at diagnosis, include comparative data across racial, ethnic, geographic, and economic groups
 - When discussing etiology, consider impact of the environment and multiple risk factors
 - Include life narratives by teens and adults with intellectual/developmental disabilities to help trainees learn more about post-transition lives of people with intellectual/developmental disabilities
 - Example: trainees read “Selected Essays of Sarah Savage Cooley” [50] before case discussion concerning Down Syndrome
 - Example: “Values in Disabilities Book Discussion” includes books written by teens and adults with intellectual/developmental disabilities; for example, “Count Us In” by Jason Kingsley and Mitchell Levitz [51]

2. Self-Reflection

- Ask trainees to write a “Life Course Biography” during orientation or early in the LEND year as a basis for group discussion using the template found on AUCD Life Course Perspective Page (<http://www.aucd.org/template/page.cfm?id=768>) under “Additional Resources”
- Provide opportunities for trainees to reflect on how they apply LCT/SDOH in their daily work with children and families:
 - Give Individual written assignment followed by discussion in class or moderated on-line discussion
- Use selected handouts to support discussions or self-reflective writing about personal experiences and views on disability, poverty, and culture from: Snow [52]. 101 Reproducible Articles: Revolutionary Common Sense for a New Disability Paradigm. Woodland Park, CO: BraveHeart Press

4. Critical Thinking

- Faculty research mentors incorporate advisement on:
 - Use the “Cultural and Linguistic Competence Checklist for Research in MCH Training Programs” from the National Center for Cultural Competence [53] to promote research strategies that include diverse subjects (including people with disabilities and families) and include diverse members of the community in research design and implementation
 - When reading the literature, consider the impact on generalizability of the failure to include diverse subjects
 - Consider how study findings may translate to policy or practice
- Develop skills for use of large national databases concerning the health status and well-being of children, including children with disabilities, by solving “paper problems” or when developing background for a research study or application for funding
 - Perform state-level and comparative inquiries using the National Survey of Children’s Health and The Survey of Children with Special Health Care Needs at the Data Resource Center for Child and Adolescent Health at <http://childhealthdata.org/learn/NSCH>
- In a journal club, incorporate reports of studies that contribute to the scientific underpinnings of LCT/SDOH; for instance, choose articles listed in the references for this article

7. Cultural Competency

- Discuss the rationale for self-assessment of cultural competency and utilize the appropriate cultural competency assessment tools at the National Center for Cultural Competency to self-assess individual cultural competence; review tools for assessing cultural competency of various types of organizations (<http://nccc.georgetown.edu/resources/assessments.html>)
- Review Culturally and Linguistically Appropriate Services in Health Care (CLAS) Institute resources and strategies at <http://www.clas.uiuc.edu/index.html>
- Review and discuss relevant articles referred to in the six LCT/SDOH Content Areas
- Discuss case studies that illustrate how culture impacts on families’ views of disability, access, services, and supports (such cases are available in two textbooks referenced here) [23, 36, 54]
- Review and discuss articles on disparities in access to services for children with disabilities and their families compared to others, and in age at disability, diagnosis, or type of disability diagnosis across cultural and socioeconomic groups
- Discuss plausible links between racism and health (for instance through residential segregation and resulting social disadvantage; through causing chronic stress) [13, 41]

Table 1 continued*8. Family-centered Care*

- LEND family discipline trainees share their personal experiences with the other trainees based on the Family Quality of Life model developed by the Beach Center on Disability at the University of Kansas [55]
- Trainees read “Impacts of Poverty on Quality of Life in Families of Children with Disabilities” by Park, Turnbull, and Turnbull to prepare for a family faculty presentation that integrates family quality of life and family support with life course theory and social determinants of health [14]
- Include a session to introduce the use of self-assessment tools to enhance family-centered practices at the individual and organizational levels during which interdisciplinary small groups review the Family Voices Family-Centered Care Self-Assessment Tool and share suggestions of practical strategies to achieve positive change https://org2.democracynaction.org/o/6739/images/fcca_ProviderTool.pdf
- Trainees conduct guided interviews with a family-focused disability organization of their choice, including discussion of: How does this organization support diverse families and assist all families throughout the life span and/or during particular phases of life?
- Enhance family mentorship home and community visiting experiences by adding:
 - LCT/SDOH component to the visit guide; for example, In what ways, if any, have cultural and social issues impacted on the acceptance and inclusion of their child/children with disabilities in their family and community?
 - Reading assignment on the impact of adverse life circumstances on child outcomes using a resource from the six LCT/SDOH Content Areas
 - Reflective writing assignment on the family mentorship experience related to how social determinants impact on the child and family

12. Policy and Advocacy

- Participate in state and national disability policy and advocacy activities
 - Include pre-participation training on knowledge and skills necessary to influence change on issues of importance to children with developmental disabilities and their families, including skills on educating policy-makers and staff (may include role-playing)
 - Include presentations and training by state policy-makers
 - Access archived webinars at AUCD.org
 - Include post-participation report-back presentation by LEND trainees related to MCH Competencies and LCT/SDOH
 - Give trainees leadership roles in local and state advocacy and policy activities
- Discuss application of science to policy using:
 - A Science-Based Framework for Early Childhood Policy Using Evidence to Improve Outcomes in Learning, Behavior, and Health for Vulnerable Children [34]
 - Article: Schaefer, Stephanie A. Understanding research: top ten tips for advocates and policymakers. Washington, DC. National Association of Child Advocates, 2001 [56]
- Provide guidance on participating in policy and advocacy activities of AUCD, related disabilities organizations, and disciplinary professional organizations
- Trainees complete the “LEND Program Policy Development, Implementation, and Evaluation,” a self-assessment designed to evaluate and compare policy experience and competency levels pre- and post- training
- Faculty and trainees include input from local and state policy-makers at the local, state, and national level in carrying out research and other projects as part of the LEND curriculum
 - Example: LEND trainee/faculty research project teams consult with “policy partners” at the local, state, and national level to align research with needs and priorities at the “big picture” level
- Skills-building on policy-writing guided by self-study using the self-guided module, “Writing Policy Briefs: A Guide to Translating Science and Engaging Stakeholders” at The Women’s and Children’s Health Policy Center at the Johns Hopkins Bloomberg School of Public Health at http://www.jhsph.edu/wchpc/de/policy_brief/index.html

Clinical Supervision and Clinical Case Discussion

- Clinical supervision: Include a focus on the application of LCP/SDOH in the clinical training setting by:
 - Role modeling knowledge of and attention to social determinants and their impact on child health and development
 - Expecting trainees to attend to manifestations of adverse life circumstances in the clinical encounter and respond appropriately
 - Always attending to linguistic differences and assuring high quality language translation
 - Use elements of “The Social Context Review of Systems” that includes attention to: social stressors and social supports; literacy level; changes in environment, among others [57]
- Use case-based discussions, building in the following considerations:
 - The impact of adverse life circumstances on access, ability to follow through on recommendations, and on developmental and other health outcomes
 - Children/youth at various developmental stages and from diverse ethnic and socio-economic backgrounds
 - The parent perspective (for children and youth), of the youth perspective for older children, and of the sibling perspective
 - Discuss one of the cases developed for the AUCD Life Course Perspective Page(<http://www.aucd.org/template/page.cfm?id=790>)

relevance of LCT/SDOH science to the objectives of our existing curriculum. We are fortunate that our faculty have welcomed the opportunity to learn new science and new evidence and to relate it to curriculum that is in place. Some faculty also used this process as an opportunity to learn and employ a more rigorous approach to curriculum development. In order for LCT/SDOH to be relevant to trainees in their everyday work with children and families, faculty and staff who provide supervision to clinical and other practicum experiences also must incorporate elements of LCT/SDOH into the practicum experience.

It is challenging to obtain a commitment from faculty and staff who are less familiar with these concepts or whose role is not centralized within the LEND Program, but efforts are underway, including faculty/staff development and mentoring; increasing trainee knowledge and skills (and therefore their expectations) to incorporate LCT/SDOH in these settings; and strengthening partnerships within practicum sites.

We have learned several important lessons. A system of regular faculty meetings provides a helpful venue for the longitudinal iterative process of incorporating LCT/SDOH into the curriculum: discussion of new content, collaboration on curriculum development, and incorporating feedback from trainees.

We have learned that incorporating this content into LEND training in our two settings has been more effectively accomplished through the process of modifying, “tweaking,” and weaving in rather than through major curriculum rebuilding. Several examples serve to illustrate how this was accomplished. Rather than adding on many new discrete lectures or workshops or a new module, we created one or two new 2-hour foundational seminar sessions (with assignments) and then found opportunities within existing lectures, seminars, group projects, and assignments into which core faculty deliberately built objectives, bridging content, and evaluation strategies related to LCT/SDOH. Examples of this include: incorporating environmental influences in an overview of intellectual and developmental disabilities; discussing barriers to access in a seminar on assistive technology and augmentative communication; highlighting social determinants during reflective exercises on family mentorship home and community visiting experiences; and revising a lecture on genetic aspects of intellectual and developmental disabilities to incorporate a consideration of epigenetics as a possible mechanism for early experiences to influence later outcomes.

Limitations of Our Approach

Our report is based on extensive collaboration between two of the 43 LEND Programs. This process did not occur in isolation from MCH training faculty at other LEND Programs and other MCH training programs (one of the authors is a member of the Life Course Curriculum

workgroup of AUCD and regularly attends national meetings of training program faculty) but did not explicitly include other programs. This might limit generalization to other programs. However, we aimed to optimize generalizability by suggesting curriculum elements that are easily adaptable to a variety of instructional methods and program structures.

Evaluation

Evaluation of the impact of our approach has thus far been informal. LEND faculty have incorporated feedback into the curriculum for the following year and have created new strategies for evaluation and curriculum oversight. Both programs have explicitly incorporated LCT/SDOH into assignments and criteria for their evaluation. One of our programs has incorporated questions on LCT/SDOH into written exams (pre-test, mid-semester, and final exams). Other new methods include: trainees addressing questions related to LCT/SDOH during interviews with family-focused disability organizations; discussion boards created and moderated by trainees in preparation for evidence-based case discussions include prompts related to LCT/SDOH; and faculty feedback on trainee performance in interdisciplinary teams includes items related to LCT/SDOH.

Next Steps

We have reported the work of two LEND Programs in incorporating LCT/SDOH. The forty-one other LEND programs around the country are undertaking similar work. As a network, we will share our strategies at conferences; through national workgroups such as the AUCD Life Course Curriculum workgroup, the Training Directors Council, and the LEND Family Discipline Network; and through written communications and additional webinars. At our two programs, the process of integration of LCT/SDOH into the curriculum will proceed through cycles of implementation, feedback, and adjustment. The process is guided by the goal of inspiring young leaders who will create systems and policy to eliminate disparities and who will train the following generation of leaders. Recent renewed interest and efforts in strengthening the national network of MCH Trainees will help assure that LEND trainees will have a central role in developing innovative approaches to training leaders who will accomplish the goals of the new strategic plan.

Acknowledgments We acknowledge the contribution Lisa Katz, MSW, core LEND faculty in social work and other members of the

core LEND faculty at our programs who contributed their expertise and creativity in carrying out our curriculum revision. This effort was supported in part through Grants (Numbers HRSA-11-036 and HRSA-06-048) from the Health Resources and Services Administration, U.S. Department of Health and Human Services.

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