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GRADUATE EDUCATION

Using a LIFE Framework to Develop MCH Leaders

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Abstract
Introduction: The Maternal Child Health (MCH) Bureau created MCH Leadership Competencies to support current and future leaders by defining the knowledge and skills necessary to lead in this field. The Michigan-LEND (MILEND) training program developed a 'LIFE. framework', an acronym that stands for Leadership, Interdisciplinary, Family-Professional Partnerships, and Equity, to codify the 12 MCH leadership competencies into an easy to remember and easy to apply structure. This manuscript addresses the question, Does the LIFE framework align with the 12 MCH Leadership Competencies? Our hypothesis is that MI-LEND trainees will demonstrate improvement in their self-assessment of the 12 MCH leadership competencies after completing the MI-LEND program which uses the LIFE framework. Methods: Data were collected from 24 MI-LEND long-term trainees (> 300 hours) who completed a 100-itemleadership self-assessment questionnaire based on the MCH Navigator at the beginning and the end of the training year. Non-parametric sign tests were used to test the median difference, item by item for each of the questions under each competency. Parametric paired-sample t-tests were used to analyze mean difference, competency by competency when the assumption of normality was met. Results: All basic and advanced-level competencies had a statistically significant improvement between the beginning and end of the training year. The greatest changes were seen in Family-Professional Partnerships, Policy, Interdisciplinary Team Building, MCH Knowledge Base and Critical Thinking – all areas emphasized in the L.I.F.E. framework. Discussion: While the LIFE framework may oversimplify MCH Leadership Competencies, it is an effective mnemonic tool to organize and articulate MCH leadership competencies and could foster consistency across MCH programs.

Significance:
MCH Leadership Competencies are well established and used across MCH training programs. The LIFE framework is an effective way to organize and articulate MCH leadership competencies. It is easy to remember, and adoption by LEND and other.

Introduction

The Maternal and Child Health Bureau (MCHB) is part of the Health Resources and Services Administration (HRSA) and administers programs, supports research, and invests in workforce training to ensure the health and well-being of mothers, children, and families across their lives. Maternal Child Health (MCH) Workforce Development grants cultivate trainees for leadership roles in teaching, research, clinical practice, public health administration and policy making, and community-based programs. MCHB created MCH Leadership Competencies to support current and future

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Table 1 MCH Leadership Competencies

SELF	1. MCH Knowledge Base/Context 2. Self-Reflection 3. Ethics 4. Critical Thinking
OTHERS	5. Communication 6. Negotiation & Conflict Resolution 7. Cultural Competency 8. Family-Professional Partnerships 9. Developing Others through Teaching, Coaching, & Mentoring 10. Interdisciplinary/Interprofessional Team Building
WIDER COMMUNITY	11. Working with Communities & Systems 12. Policy

leaders by defining the knowledge and skills necessary to lead in this field. The leadership competencies, shared across the multiple MCH disciplines, unify the workforce on a common path to equip the MCH workforce to improve the health of MCH populations (MCH Leadership Competencies - Version 4.0). As can be seen in Table 1, there are 12 MCH leadership competencies that are organized within a conceptual framework in a progression from self to wider community. This model demonstrates the widening contacts, broadening interests, and growing influence that MCH leaders can experience over their careers. Each of the 12 competencies includes a definition and knowledge areas which provide a basis for foundational and advanced skills.

MCH leadership competencies were first released in 2007. They were developed based on the leadership literature and an interactive, collaborative process. Since that time, they have been refined and modified (most recently in 2018) to reflect changes in the field. The 12 MCH Leadership Competencies describe the necessary knowledge, skills, personal characteristics, and values within a framework designed to support and promote MCH leadership. The Competencies serve as a framework for MCH training program objective, the measurement and evaluation of training for MCH leadership, and to cultivate, sustain, grow, and measure leadership within the current MCH workforce (Kogan et al., 2014). In 2010, MCHB launched the MCH Navigator, a web-based portal for ongoing education and training for a diverse MCH workforce. The MCH Navigator focused on organizing high quality, free, web-based learning opportunities that supported established learning competencies without duplicating existing resources. The MCH Navigator features 248 learning opportunities, with additional tools to support their use. Findings from formative assessments showed that the portal has been widely used and valued by its primary audiences and promotes both an individual's professional development and an organizational culture of continuous learning (Grayson et al., 2014).

Table 2 Alignment of L.I.F.E. Framework with MCH Leadership Competencies

L.I.F.E. Framework	12 MCH Leadership Competencies
LEADERSHIP	1. MCH Knowledge Base/Context 2. Self-Reflection 3. Ethics 4. Critical Thinking 5. Communication 6. Negotiation & Conflict Resolution 9. Policy & Advocacy 11. Developing Others Through Teaching, Coaching & Mentoring 12. Working with Communities & Systems
INTERDISCIPLINARY	10. Interdisciplinary Team Building
FAMILY-PROFESSIONAL PARTERNSHIPS	8. Family-Professional Partnerships
EQUITY	7. Cultural Competency

Leadership Education in Neurodevelopmental and Related Disabilities (LEND) programs are part of MCHB workforce development. LEND programs provide graduate-level training to future leaders from multiple disciplines. The aim is to improve the health of children who have, or are at risk of developing, neurodevelopmental disabilities or other similar conditions such as autism and intellectual disabilities. There are currently 60 LEND programs located in 44 U.S. states, with an additional six states and three territories reached through program partnerships. LEND trainees come from a wide range of cultural backgrounds and include individuals from many disciplines, including self-advocacy and family leadership. Guided by individualized leadership plans, LEND trainees participate in a variety of activities within and outside the classroom. While all LEND programs have the same goals, each provides training differently to meet the unique needs of their state, territory, or region.

In 2016, in preparation to establish a LEND program for the first time in Michigan, the Michigan-LEND (MI-LEND) director carefully reviewed the 12 MCH Leadership Competencies (MCH Leadership Competencies - Version 4.0) and observed they could be organized into four categories – leadership, interprofessional practice, family professional partnerships and equity – to form the acronym LIFE. (Table 2). The MI-LEND faculty used this LIFE acronym in the development of their LEND curriculum to organize the MCH competencies. More specifically, an overview of the LIFE framework is provided in the training manual and presented at the first orientation session. There are individual training modules for each of the LIFE components (curriculum available upon request). Additionally, the LIFE framework is woven throughout the curriculum for each training topic. Moreover, trainees are asked to set a goal related to each of the LIFE components in their Individualized

Table 3 L.I.F.E. Framework - Examples of Key Questions/Considerations

Leadership	Interdisciplinary	Family-Professional Partnerships	Equity
What leadership strengths/styles can I bring to this situation? **What** strategies can I use to facilitate creativity, innovation, collaboration, and leadership? **How** can I better facilitate learning between the classroom and the workplace? **How** can I address identified gaps in the service system? **What** tools can be used to avoid or resolve conflicts?	**What** is my role in identification, assessment, and treatment? **What** does each discipline bring to the care of a child and family? **How** do disciplines interact as a team? **How** can I more effectively communicate with other professionals on my team? **How** can we demonstrate respect for others' knowledge and approach to a problem?	**Who** are the members of the family? **What** are their current roles? **How** can family strengths be built upon to better support the child with a disability? **How** does the family want to engage with professionals? **How** can community resources be used to supplement family resources to better support the child? **How** can the clinician work as a team with other providers and the family, even across geographic distance?	**Who** is accessing/benefiting from our programs? **Who** is not? **Who** is at risk for disparate outcomes in the health system**?** **What** are barriers, differential impacts? **What** can we do to change that? **Why** are some people at greater risk? **How** can we reach and engage them? **How** are our actions relevant to specific populations? **How** can we improve our surveillance system and build the ones that collect the data we need?

Learning Plans (ILP), journals, projects and assignments. Table 3 highlights examples of key LIFE questions that are considered during the development, implementation, and evaluation of all MI-LEND curricular activities. This manuscript addresses the question, *Does the LIFE framework align with the 12 MCH Leadership Competencies*? Our hypothesis is that MI-LEND trainees will demonstrate improvement in their self-assessment of the 12 MCH leadership competencies after completing the MI-LEND program which uses the LIFE framework.

Methods

Subjects

The MI-LEND program began in 2016 and is a collaborative effort of seven Michigan universities and the Family Center for Children and Youth with Special Health Care Needs. The primary aim of the MI-LEND program is to train emerging leaders who will improve the health of infants, children, and adolescents with or at risk for neurodevelopmental disabilities and other related health care needs. Data were collected from 24 MI-LEND long-term trainees (> 300 h) from two cohort years: 2018-19 and 2019-20. As a group, the sample reported being 87.5% female; 66.67% White, 16.67% Black or African American, 8.33% Asian, and 8.33% Middle Eastern or North African; and the average age at the time of participation was 29.75 years. Subjects include graduate level trainees with different lived experiences (i.e. Family Members, Self-Advocates) and from the following disciplines:

- Social Work.
- Public Health.
- Speech-Language Pathology.
- Occupational Therapy.
- Medicine.
- Audiology.
- Genetic Counseling.
- Developmental Behavioral Pediatrics.
- Psychology.
- Nursing.
- Kinesiology.
- Applied Behavior Analysis.
- Dentistry.

Instruments

MI-LEND trainees completed self-assessment questionnaires at the beginning and end of the cohort year. Similar to other MCHB programs, the MI-LEND program assesses trainees on MCH competencies using the MCHB Navigator Self-Assessment. As described on the MCH Navigator website, self-assessment is considered a major component of learning in public health (Sujata et al., 2001). It provides an opportunity for health professionals to reflect on competency-based strengths and weaknesses in order to identify learning needs and reinforce new skills or behaviors in order to improve performance. The literature suggests that self-assessment is a prerequisite for maintaining professional competence and cites an increasing need for self-assessment in healthcare settings as health systems change (Royce, 1990; Sujata et al., 2001). With all the important

and critical benefits associated with self-assessment, it was not designed to be a short process. MI-LEND developed a 100-item assessment tool based on the MCHB Navigator platform designed to examine each competency and its associated foundational and advanced skills.

MCH Leadership Competencies:

The 100-item leadership competencies self-assessment aligns with the Maternal and Child Health (MCH) Leadership Competencies Version 4.0 (MCH Leadership Competencies - Version 4.0). Trainees were asked to rate their current levels of experience in different areas of professional competence using the following scale:

- 0 = None.
- 1 = Basic - prepared for the simple assignments or tasks, needs ongoing supervision.
- 2 = Proficient - able to perform many types of assignments or tasks independently with occasional support.
- 3 = Advanced - performs nearly all types of assignments or tasks independently with little support.
- 4 = Leader - exemplary performance, able to share expertise with others.

For example, the first competency area (MCH Knowledge Base/Context) includes the following six foundational and two advanced skills.

Foundational:

- Describe MCH populations and provide examples of MCH programs, including Title V programs.
- Describe the utility of a systems approach in understanding the interaction of individuals, groups, organizations, and communities in health outcomes.
- Use data to identify issues related to the health status of a particular MCH population group and use these to develop or evaluate policy.
- Describe health disparities within MCH populations and offer strategies to address them.
- Evaluate critically evidence-based programs and policies for translation of research to practice.
- Understand the value of partnering with family- and community-led organizations to identify ways to engage families and community members in efforts to improve programs, policies, and practices.

Advanced:

- Demonstrate the use of a systems approach to examine the interactions among individuals, groups, organizations, and communities.
- Assess the effectiveness of an existing program for specific MCH population groups.

Statistical Methods. For each measure of leadership competency, itemized analyses were conducted to examine the differences from pre- to post-program for all trainees in the two cohorts combined. Non-parametric sign tests were used to test the median difference, item by item for each of the questions under each competency. Descriptive statistics and the Shapiro-Wilk Test were conducted for normality testing, given the small sample size (n = 24). Parametric paired-sample t-tests were used to analyze mean difference, competency by competency (e.g., basic-level, advanced-level, and overall competency), when the assumption of normality was met. Cohen's d was used to show effect size. A commonly used interpretation is to refer to effect sizes as small ($d = 0.2$), medium ($d = 0.5$), and large ($d = 0.8$) based on benchmarks suggested by Cohen (1988). Statistical significance was defined as $p < .05$.

Human Participant Research Determination

The Human Participant Research Determination Tool was completed and submitted to the Wayne State University Institutional Review Board (IRB) for review. The IRB found the project did not meet the definition of human participation research and therefore did not require additional IRB review or approval.

Results

An independent evaluation of the pre- and post-LEND Leadership Competencies Assessments showed that all basic and advanced-level competencies had a statistically significant improvement between the beginning and end of the training years. Table 4 shows the findings at the basic-, advanced-, and overall levels for the 12 MCH leadership competencies. Statistical analyses indicated significant improvements in all of the 12 measured leadership competencies through the pre-/ post- self-reported assessments of MI-LEND trainees. Detailed results are reported in Table 4. Trainees also were asked to share their feedback through MI-LEND evaluations. Some examples of their feedback include:

Table 4 Pre-post Leadership Competency Scores (N = 24)

	Basic		Cohen's d (p-value)	Advanced		Cohen's d (p-value)	Overall		Cohen's d (p-value)
Leadership competency	**Pre**	**Post**		**Pre**	**Post**		**Pre**	**Post**	
1. MCH Knowledge Base	7.63	16.29	1.72 (< 0.001)	2.08	5.71	1.55 (< 0.001)	9.71	22.0	1.70 (< 0.001)
2. Self-Reflection	2.34	3.21	N/A*	4.83	8.58	1.37 (< 0.001)	7.17	11.79	1.39 (< 0.001)
3. Ethics	6.00	8.88	1.17 (< 0.001)	3.00	5.21	1.03 (< 0.001)	9.00	14.08	1.22 (< 0.001)
4. Critical Thinking	6.75	10.75	1.23 (< 0.001)	5.04	10.67	1.72 (< 0.001)	11.79	21.42	1.67 (< 0.001)
5. Communication	11.46	15.33	1.05 (< 0.001)	4.92	8.00	1.28 (< 0.001)	16.37	23.33	1.19 (< 0.001)
6. Negotiation & Conflict Resolution	5.79	8.00	0.83 <0.001)	5.29	8.04	1.00 (< 0.001)	11.08	16.04	0.95 (< 0.001)
7. Cultural Competency	5.29	8.21	0.95 (< 0.001)	4.75	10.46	1.58 (< 0.001)	10.04	18.67	1.39 (< 0.001)
8. Family-Professional Partnerships	9.17	18.38	2.01 (< 0.001)	5.46	13.67	1.95 (< 0.001)	14.63	32.04	2.08 (< 0.001)
9. Developing Others Through Teaching, Coaching & Mentoring	12.75	17.00	0.97 (< 0.001)	6.58	13.04	1.84 (< 0.001)	18.83	30.04	1.44 (< 0.001)
10. Interdisciplinary Team Building	5.37	11.38	1.64 (< 0.001)	7.92	16.13	1.64 (< 0.001)	13.29	27.50	1.74 (< 0.001)
11. Working with Communities & Systems	8.58	17.87	1.58 (< 0.001)	5.42	14.00	1.96 (< 0.001)	14.00	31.88	1.64 (< 0.001)
12. Policy	2.67	7.08	1.72 (< 0.001)	3.42	11.50	1.96 (< 0.001)	6.08	18.58	1.94 (< 0.001)

*N/A: Did not meet normality assumption

- "My LIFE project is my thesis, so it is research. I like that LEND gave me the perspective that even the most basic, applied research can incorporate the LIFE perspective. It also encouraged me to think of my thesis less as a requirement of my degree and more as an opportunity to apply it to our clinic and clinical sites as a quality improvement initiative."
- "It (the LIFE Framework) helped to shape the learning experience; helped me to focus."
- "The LIFE perspective was helpful. It shaped our (trainees') learning; our thinking around creating equity across all systems."
- "The fact that I can use this in my professional career is very valuable to me. I would never have thought of doing something like this without LEND."
- "Good job incorporating into face-to-face meetings. I like the framework overall."

Discussion

Trainees' competence in all domains of leadership improved significantly after participating in MI-LEND using the LIFE framework. Of note, the greatest changes were seen in Family-Professional Partnerships, Policy, Interdisciplinary Team Building, MCH Knowledge Base and Critical Thinking – all areas emphasized in the LIFE framework.

Limitations of the study include using self-reports to measure trainees' competence. Trainees' knowledge and skills were not directly measured. Instead, trainees were asked to rate themselves as having no experience, basic, proficient, advanced or leader in each of the areas. Though trainees may over or underestimate their competence, any bias should wash out since the same trainees completed the same questionnaires before and after participating in the program. Moreover, the findings from our MI-LEND trainees may not be generalizable to trainees in other MCH programs and in other states. Additionally, the MI-LEND trainee sample was largely female and White. A lack of gender and racial/ethnic diversity could also impact generalizability to more diverse cohorts of trainees. Another limitation is the lack of a control group. We do not have data on MI-LEND training without the LIFE framework since it has been utilized since the inception of MI-LEND and all associated experiences include the framework. Finally, we cannot assume that the improvement in trainee leadership competencies is attributable to the LIFE framework alone. The MI-LEND curriculum is diverse, with many moving parts and contributing faculty from throughout the state. The LIFE framework

provides an overarching organizational structure but is one of many parts of the MI-LEND program.

While the LIFE framework may oversimplify MCH Leadership Competencies, the intention of the framework is to provide a mnemonic device that allows trainees and faculty to keep these critical competencies in the fore of their minds. The LIFE framework is an effective tool to organize and articulate leadership competencies and could serve as a national model for all LEND and MCH training programs. It is easy to remember, and adoption by LEND programs would foster consistency across programs. Future studies could examine the alignment of the LIFE framework with other MCH competencies (core competencies, public health competencies). Future studies could also potentially examine making modifications to the MCH Navigator Self-Assessment tool that is either shortened and/or organized using the LIFE framework.

Authors Contribution Sharon Milberger – creator of the LIFE framework and lead writer of manuscript; Ke Zhang – conducted all data analyses and lead writer of the results section; Michael Bray – oversaw data collection and co-wrote the methods section; Jane Turner – assisted in refining the LIFE framework and co-wrote the conclusion section.

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Declarations

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Consent to participate (include appropriate consent statements) N/A.

Consent for publication (consent statement regarding publishing an individual's data or image) N/A.

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