PM&R Implementation Science Special Issue

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7. Funding Source (if applicable)

NA

8. Manuscript Title

The Multilevel Limb-loss and Preservation Rehabilitation Continuum Model (MLPRC) - An implementation model for designing stakeholder education and coordination instruments and developing and refining continuum-of-limb-care program programs

9. Abstract (500 words maximum)

Introduction
The limb loss and preservation journey (journey) from threatened limb loss to limb loss and the subsequent rehabilitation steps to independence, is long, complicated, and prone to delays, attrition, and inequities. Viewed through a patient lens, there is uncertainty regarding rehabilitation, prosthetic devices, and return to normality. Viewed through a care-provider lens, the level of transdisciplinary coordination, communication, knowledge, and skills needed for optimal multidisciplinary care across the entire journey may be siloed. Viewed through an organizational lens, comprehensive limb care programs exist, but are challenging to uniformly replicate.

An implementation model that unifies these multilevel patient, care provider and organizational perspectives could be used to create a shared conceptualization of individual progress, identify bottlenecks and gaps, and define interventions and implementation strategies for the journey. The aim of this article is to present a novel implementation model that meets this knowledge gap and to describe its applications for improving limb care.

Methods
Definition: The Multilevel Limb-loss and Preservation Rehabilitation Continuum model (MLPRC) is an implementation model for the field of limb care that provides a structured framework, standardized terminology, and guidelines for applications at the patient, provider, organization, community, system and policy levels.

Model development: The model was developed through a synthesis of established literature-based concepts from rehabilitation

science, healthcare administration, and implementation science.
Rehabilitation science concepts include phases of amputation rehabilitation.
Healthcare administration concepts include the patient journey, continuum of care, and quality improvement run charts.
Implementation science (IS) concepts include the logic model, socioecological levels, and EPIS.

Results
The model includes three constructs.
The first is a horizontal, time-ordered, continuum of patient journey phases (limb preservation, pre-prosthetic, prosthetic and post-prosthetic phases) separated by milestones, occurring in parallel with corresponding healthcare delivery steps, separated by patient-organization interaction touchpoints. This construct enables a quantitative, measurable description of an individual's journey within their care delivery organization.
The second is a vertical, phase-specific, multilevel perspective characterization that includes socio-ecological determinants of care engagement at patient, provider, and organization levels (inner context cell), and community, system and policy levels (outer context cell). This construct guides identification of level-specific characteristics, gaps, barriers, and outcomes, and promotes an understanding of factors within (inner context cell) and outside (outer context cell) an organization's sphere of direct influence.
The third is the outermost implementation cell that helps to identify interventions and targeted implementation strategies responsive to the gaps and barriers identified.

Discussion
Patient-level applications include development of paper-based and phone-based education and navigation instruments. Provider-level applications include development of education and coordination structures such as integrated practice and referral streams. Organization-level applications include development and refinement of continuum-of-limb-care programs. Community, system, and policy-level applications include structured development of community resources, interdisciplinary organizational partnerships, and data repositories to guide policy for limb care.

Conclusion
The MLPRC is a living model that presents a unified picture of the field of limb loss and preservation for multiple disciplines serving this field and provides a structured mechanism for implementing multilevel applications across multiple socioecological levels to improve limb care.

10. Key Words (must list at least 1 up to 6 maximum)

1 : Amputation rehabilitation
2 : Patient journey
3 : Socioecological levels
4 : Implementation model
5 : Continuum of care program
6 : Patient navigation

11. Key Implementation theories or frameworks used in this manuscript

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