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What's New in Pediatric Rehabilitation Medicine and Practical Applications for LMIC

Topic: Rehabilitation Across the Continuum Of Care

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BACKGROUND

Significant advancements in pediatric rehabilitation medicine over the past 10 to 20 years have reshaped the care of many patient populations, and while these innovations are widely used in the United States, many can be adapted for low- and middle-income countries (LMICs). We will discuss three specific innovations: rhizotomies as a "single-visit" treatment for spasticity combined with orthopedic interventions, new gene therapies for SMA and DMD, and new durable medical equipment technologies.

Combined Selective Dorsal Rhizotomy (SDR) and Single-Event Multilevel Surgery (SEMLS) have shown promising results in managing spasticity and contractures in cerebral palsy and other neuromuscular conditions. At Boston Children's Hospital, we are combining rhizotomy with orthopedic procedures like tendon lengthening to offer a comprehensive treatment for both spasticity and musculoskeletal deformities. This "single-visit" approach improves patients' quality of life, reduces the number of surgeries, and can be adapted for LMICs, where access to multiple surgeries is limited, offering a cost-effective solution.

Gene therapy for Spinal Muscular Atrophy (SMA) and Duchenne Muscular Dystrophy (DMD) has significantly altered the course of these diseases by targeting their genetic causes, improving motor function and survival. While these therapies are expensive, efforts to reduce costs and increase accessibility make them increasingly viable for LMICs. By incorporating local manufacturing and partnerships, gene therapies can be introduced gradually, offering hope to patients who previously had no options. Early inclusion of SMA and DMD in newborn screening programs allows for prompt treatment, significantly improving outcomes and preventing severe disabilities.

Over the past few years, there have been significant advances in mobility technology that allow for more efficient wheelchair utilization and ambulation, including over various terrains. We aim to discuss applications including robotic and electric support for ambulation along with newer technology for power assist attachments for manual wheelchairs. These have direct application to LMIC as they can enhance community accessibility. We will discuss practical applications and current barriers to utilization including practicality, need for electricity and cost.

CONCLUSION

Advancements in pediatric rehabilitation medicine, such as combined rhizotomy, gene therapies for SMA and DMD, and equipment technologies, can improve care in low- and middle-income countries. By adapting these innovations, we can enhance quality of life, reduce surgeries, and improve outcomes for vulnerable children with limited resources.

Statement of Disclosures

None

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