MANUAL MUSCLE STRENGTH TESTING IN CRITICALLY ILL CHILDREN: FEASIBILITY AND RELIABILITY.

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Introduction: Diagnosing Pediatric Intensive Care Unit acquired weakness (PICU-AW) is difficult because of challenges in assessing muscle strength. The Medical Research Council (MRC) grading is a widely used screening method for muscle weakness in critically ill adults(1) however its utility for screening PICU-AW has not been established.

Objectives: To determine the feasibility and inter-observer reliability of muscle strength testing using MRC in critically ill children.

Methods: A prospective observational sub-study of the “Wee-Cover” pilot study conducted at McMaster Children’s Hospital. Participants aged >1 year to

Results: There were a total of 95 attempted MRC exams on 33 participants. Fifty-five (57%) of these could not be conducted or completed, and therefore a MRC sumscore could not be assigned. Nine (27%) participants had at least one exam completed while in the PICU, and twenty-one (64%) participants had at least one exam completed before discharge from hospital. Commonest reasons for inability to perform MRCs were patient sedation, and inability to comply due to cognitive ability, pain, or non-cooperation. Inter-rater reliability demonstrated poor reproducibility.

Conclusion: We found that MRC is neither feasible nor reliable as an early screening tool for PICU-AW. Poor reliability was attributable primarily to patient related factors. Future research evaluating the efficacy of exercise based rehabilitation should focus on more meaningful patient endpoints such as functional outcomes and recovery.


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