BEYOND EPIDEMIOLOGICAL RISK ASSESSMENT: FRAILTY SYNDROME IDENTIFICATION AS THE KEY FOR CLINICAL MANAGEMENT, BIOLOGICAL DISCOVERY, AND INTERVENTION DEVELOPMENT.

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Overview: Multiple frailty instruments have been developed over the past several years that have mostly been utilized for risk assessment in population studies of community dwelling older adults. These frailty definitions vary widely from a syndromic phenotype with biologic underpinnings to a summary index of medical conditions and functional impairments. Most of these tools are able to detect older adults who are at high risk of developing disability, chronic illness, falls, hospitalization, and mortality.   The utility of these tools is therefore highly variable, and their use should be carefully considered depending on the purpose of the planned research. In addition, most of these tools have not been utilized to study the biology that underlies frailty, and have not or cannot be used to study targeted interventions because of the component measurements incorporated into the frailty definition. In this symposium, we will first review a number of tools that are utilized for frailty research and discuss their actual and appropriate uses, describe the refinement of a commonly utilized frailty phenotype and potential ways to simplify this tool for clinical practice, and finally, provide an update on the biological discoveries that have been made related to frailty and the potential for intervention development that has come from these novel findings. At the end of this symposium, the participants should have a working understanding of the range of frailty measurement tools, an understanding of approaches that might allow for simplification and broader use of frailty phenotypes, knowledge of the dysregulated physiological systems and aging biology pathways that impact frailty, and potential targeted prevention and intervention strategies.

Presentation #1: DIFFERENT INSTRUMENTS FOR DIFFERENT PURPOSES: AN OVERVIEW OF THE VARIOUS FRAILTY INSTRUMENTS AND THEIR APPLICATIONS (Varadhan, R)

The concept of frailty captures the notion of heightened vulnerability to adverse outcomes in older adults. Although numerous instruments have been developed to identify frailty, there is no consensus on best measures. The instruments range from single-component tools to those with 70+ components. The domains measured in these instruments include physical, cognitive, psychological, medical, social, and nutrition. Given the bewildering proliferation of instruments and their diversity, it is critical to consider the purposes for using a frailty instrument. We review the various instruments and discuss their appropriate use with regards to risk assessment, biological study, clinical management, and intervention development.

Presentation #2: FRAILTY PHENOTYPE REFINEMENT: CAN SIMPLIFICATION BE ACHIEVED WITHOUT LOSS OF SYNDROME MEASUREMENT VALIDITY? (Xue QL)

This study aims to simplify the CHS frailty phenotype while retaining its internal validity regarding frailty syndrome identification and accuracy of risk prediction for adverse aging outcomes. Latent class analyses found classifications based on 3 or 4 of the original 5 frailty criteria to be similar in their specificity and negative predicted value for an underlying syndromal construct of frailty, and distinguished by their sensitivity and positive predicted value. Many of the 3-criteria definitions are better predictors of disability and mortality than the standard 3-out-of-5 definition. We conclude that the optimal frailty measure depends on the purpose of its application.

Presentation #3: RECENT ADVANCES IN UNDERSTANDING THE BIOLOGY OF FRAILTY AND THE IMPLICATIONS FOR SELECTION OF INTERVENTION TARGETS (Walston JD)

Biological discovery related to frailty has accelerated in the past few years through the development of a validated phenotype and through its application in population studies and animal model approaches. These studies have helped to highlight chronic inflammatory pathway activation, altered sympathetic nervous system and angiotensin system activity, and neuroendocrine change as key physiological drivers of frailty. In addition, altered mitochondrial function appears to influence these and other frailty-related changes. Although interventions have yet to be developed that target frailty, greater biological understanding will allow for a more targeted approach to preventing and treating frailty.