Measuring Outcomes in Aphasia and Apraxia of Speech in the Context of a Learning Health Care System

Outcomes measurement is playing a central role in considerations of future payment systems in health care (e.g., Institute of Medicine, 2010; Porter, 2010). Transformation of the infrastructure underlying health care in the United States is necessitated to develop new payment systems that can sustain affordable and accessible quality health care. Amidst much debate about how to make this happen, interestingly, there are a few tenets upon which stakeholders seemingly agree; namely that future healthcare systems need to: a) measure and incentivize quality; b) measure and promote accountability; c) be economically sustainable; and d) that healthcare decisions, regulatory policies, and the valuation of services need to be based on valid data. The central role that data play in this envisioned future has accelerated the development of quality indices and outcomes measures that can advance our understanding of which services are most cost-effective and help to address the multifaceted question of *what works best for whom under which circumstances*. In order to understand which factors significantly affect patient outcomes, case-mix information (e.g., patient characteristics such as their health problems and the severity of those conditions, comorbidities, and demographic information) and information about service delivery (e.g., facility type, practitioner factors, type and dosage of treatment) must be captured in a centralized data repository so that the effects that case-mix and service delivery factors have on patient outcomes can be modeled and subsequently used to predict *what works best for whom under which circumstances*.

As patient factors mediate the effects of services on outcomes, case-mix adjusted data are needed to compare the effectiveness of different interventions and ultimately, to model the costs and benefits of providing specific services for various patient-groupings. Speech-language pathology and other health care disciplines are advancing knowledge concerning *what works best for whom under which circumstances* but no discipline will be able to satisfactorily address this multi-faceted question without large-scale data collection instruments that amass information about the critical case-mix and service delivery factors so that adequately powered analyses can be conducted to examine of the effects that case-mix and service delivery factors have on patient outcomes.

This presentation will describe the American Speech-Language-Hearing Association's National Outcomes Measurement System (NOMS) and report on an analysis of NOMS data obtained between July, 2012 and July, 2013 from 1506 patients treated for aphasia, 352 treated for apraxia of speech, and 296 treated for both aphasia and apraxia of speech. NOMS uses a seven-point multi-dimensional scale to obtain clinician-generated ratings of initial severity and outcomes. These scales, known as the *Functional Communication Measures* (FCMs), have been endorsed by the National Quality Forum (a preliminary step to obtaining endorsement by the Center for Medicare and Medicaid Systems) and have served as a model for reporting G-Codes to Medicare for Part B reimbursement. At the national level, the data are used to detect trends in service

delivery and patient characteristics, to develop hypotheses related to treatment outcomes and their determinants, and to inform policy and reimbursement issues. One of the key questions that can be addressed using NOMS data concerns the factors that predict resource utilization (e.g., the number of treatment sessions or hours). Case-mix adjusted analyses conducted to test the association between the hours of treatment provided and observed gains on the relevant FCMs will be described. Key case-mix factors that account for approximately 60% of the variance include initial severity at admission and the extent to which patients had a concomitant cognitive disorder, motor speech disorder, and/or dysphagia. Medical diagnosis also accounts for a portion of the variance regarding the number of hours of treatment provided, although not as much as initial severity or case-mix complexity. Several factors that are routinely collected, such as gender and age, did not contribute significantly to informing the resource utilization model.

Limitations of the current NOMS platform will be described as will plans for future modifications designed to enhance prediction of *what works best for whom under which circumstances*. Current limitations that will be addressed in the next version of NOMS include: (a) a singular focus on clinician-reported outcomes but the next version of NOMS will include patient-reported outcomes as well; (b) a paucity of information about the nature of the services that are delivered but the next version of NOMS will include a taxonomy of treatment approaches so that clinicians can indicate which approach was taken to address the patient's needs; and (c) a lack of specific information about the treatment goal(s) or target(s) of change but the next version of NOMS will incorporate enhanced ICF codes (i.e., from the International Classification of Functioning, Disability, and Health) so that clinicians can indicate which target(s) were intended to be treated across impairment, activity, and participation domains.

While methods employed to generate knowledge has advanced at a remarkable pace over the past 100 years, the methods employed to access knowledge for clinical care have not evolved that much. Despite considerable growth in clinical knowledge, the "right" evidence is often not available for clinical decision-making, the uptake of new discoveries continues to be slow, and even when evidence is available, it is not always applied consistently (i.e., treatment fidelity may be poor). More recently, progress in computational science and informatics have supported the development of large-scale databases that can continuously and reliably capture and deliver evidence to guide, tailor, and improve clinical decision-making and care quality (Institute of Medicine, 2011). *Learning health care systems* are likely to be incorporated into electronic health records so that information about clinical care can fuel knowledge creation and in turn, be accessed at the point of care to accelerate knowledge translation. The data elements needed to transform NOMS to function as a learning health care system that can better address the multifaceted question of *what works best for whom under which circumstances* and support knowledge translation and quality improvement efforts will be discussed.

Continued development and use of NOMS will be critical to meeting many of the challenges posed by the changing landscape in health care. This presentation is intended to provide background knowledge on how

NOMS can address these challenges, describe the results of an analysis of the NOMS data addressing resource utilization and outcomes of patients with aphasia, apraxia of speech, or both, and to describe plans already underway to realize an envisioned future in which the creation of clinical evidence, knowledge translation, and quality improvement efforts will all be better supported through a transformed NOMS that functions as learning health care system.

References

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