Neurological diseases often affect voice and motor speech production (aka dysarthria). In many progressive neurological diseases, voice and speech disorders might be the first signs of the disease, although these signs might be imperceptible. In recent years there has been a dramatic increase in research studies aimed to develop acoustic voice analysis techniques and classification methods for the early detection and monitoring progression of the neurological disease. The findings from these studies are extremely important both from a theoretical standpoint and clinical applications. Most of these studies are related to the dysarthria associated with Parkinson's disease. In spite of these important findings, there is still a need for studies that improve early detection and monitoring progression of neurological diseases by acoustic speech analyses and classification/machine learning methods. One way to improve these methods is to determine which speech tasks are most sensitive, specific, and effective for the detection, monitoring, and characterization of the dysarthria and the neurologic disease that underlie the dysarthria. The purpose of this presentation is to address these issues and to suggest specific speech tasks for different types of dysarthria.