TARGET AUDIENCE: Clinicians and researchers interested in the novel application of functional blood oxygen level dependent (BOLD) and arterial spin labeling (ASL) imaging to multiple clinical arenas.

OUTCOME/OBJECTIVES: The attendee will understand the application of functional BOLD and ASL studies in both health and disease (i.e. aging, Alzheimer's disease, depression, temporal lobe epilepsy, multiple sclerosis, and stroke).

PURPOSE: To evaluate the applicability of functional BOLD and ASL for mapping brain areas involved in disease and assist in the evaluation of pharmacological interventions and potential for recovery.

METHODS: The basic theory/methodology/processing methods utilized in functional BOLD and ASL will be reviewed. Special focus will concentrate on existing limitations with current functional BOLD and ASL techniques in disease. A brief discussion of the future potential for calibrated BOLD will be considered.

RESULTS: Functional BOLD and ASL are non-invasive method that can provide valuable information that can assist in the management of patients with particular neurological disorders. Observed functional changes may occur early in disease.

DISCUSSION/CONCLUSION: Functional BOLD and ASL methods may serve as early biomarkers of disease and allow for evaluation of therapeutic interventions within certain neurological diseases. However, these methods remain in their infancy and have primarily been individually applied to select group of patients. Additional studies that combine multiple methods are needed in a variety of neurological disorders.