Magnetic reson ance spectroscopy (MRS) and magnetic resonance spe ctroscopy imaging (M RSI) is inc reasing be ing utili zed a s adjunc ts for diffe rentiating be nign from malignant le sions in the cli nical setting. MRS has the ability to pro be intracell ular metabolites, such as, chol ine (Cho), Creatine (Cr), citrate (Ci) and N -acetylaspartate (NAA). The observa tion of a high Choli ne si gnal appears to be the sp ectroscopic hallmark of cance r. This additional inform ation can be very useful in cas es of indeterminate fi ndings i n su spicious lesions, for example, in breast or prostr ate cancer. Indeed, recent advan ces have mov ed the u se MRS in to the cl inical real m for detection and c lassification of these tum ors and more i mportantly, m onitoring response to neoadjuvant chemotherapy treatment. This presentation wi ll review the pr inciples of MRS, incl uding, pulse sequences, MRS data coll ection, d ata analy sis, quantification, and quali ty assurance . Three major topics are con sidered. Introduction of relevant intracellular me tabolites and their biol ogical and medi cal signi ficance in cancer, the principles underl ying each quanti ty are given. Second, major pulse seque nces used for MRS, e.g., PRESS or ST EAM in breast and p rostrate cancer. F inally, MRS data analysis and qu antification of the results with pathologi cal observat ions will be also compared wi th MRS-derived quantities where appropriate.

This pr esentation is intended as an introductio n to the field of MRS for a nyone w ho desires to u se the scope of m odern MRS techn iques, its application a nd us e for monitoring the rapy. It will b e o f interest to medi cal phy sicists who ar e consi dering undertaking quantitativ e MRS, a s well as those already in the field. At the e nd of this session the attentive par ticipant shall be able to

1) I dentify the clinically impor tant quantities (e.g. m etabolites) that can be measu red with MR S.
2) B e familiar w ith the methods and techniques used for MRS acquisi tion.
3) B asic und erstanding of the application of M RS to breast and prostrate cancer.