

When the surgeon won't operate until a clinical MR spectroscopy exam (either in vivo or on biopsy) is available then it is clear that the spectroscopy technology provides information important to patient management. That being said in vivo clinical spectroscopy remains site specific. If a patient is prepared to travel, high level diagnostic spectroscopy is available including for the brain, breast, prostate and ovary. Pathology laboratories have shied away from having magnets in their armamentarium so MR path labs are starting to appear to do just MR spectroscopy. What then are the issues then that stop spectroscopy technology going main stream? How can these issues be overcome and how long before it is taken seriously enough for the healthcare providers or governments to pay for its use?

Spectroscopy has faced many problems not the least of which is that it reports accurately. In many cases it provides information not recognized by other modalities. In order to correctly interpret such data in the clinical setting, it requires surgeons, pathologists and more recently neurologists who need the answer in order to help their patients. However, spectroscopy is currently seen to fit under clinical radiology in healthcare logistics.

For many years the capacity to acquire spectroscopy data at the level of sophistication needed for clinical diagnosis was not possible on a clinical scanner. Now certain manufacturers provide spectroscopy platforms, in tandem with imaging capabilities that allow an MR technician (as opposed to a physicist) to collect robust spectroscopy data sets. Manufacturers have also worked towards coils that are as effective for spectroscopy as for imaging. Thus the hardware is now in place. Manufacturers more recently are also accepting of the fact that informatics analysis of such clinical spectroscopy data is needed to replace a trained spectroscopist at each site.

Meanwhile we spectroscopists have listened to the manufacturers and considerably reduced the time needed to accumulate spectroscopy data. The introduction of 2D spectroscopy provides considerably more accurate information on many more chemical species than the 1D spectrum can reliably interrogate. Teams are also working towards the use of hyperpolarized molecules to speed up diagnosis and as a means to interrogate altered biochemistry.

For MR to go mainstream and get reimbursement several high profile diagnostic capabilities are needed that direct the management and therapy of patients and for which there is no other technology available. Two such advances will be described as will the steps needed to make the technology available to the patient cohorts in need.

The solution to the remaining issue faced by spectroscopy is suggested by Max Planck.

*A scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die and a new generation grows up that is familiar with it.*