Emerging Challenges Faced by the MR Community

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The global burden of disease has shifted significantly over the last 25 years and non-communicable diseases now exceed communicable diseases in their impact on Disability Adjusted Life Years. (1) Ischemic heart disease is now number one worldwide and stroke and back disorders have moved up to 3 and 6 respectively. These conditions have now become as important in the third world as they are in New York and Toronto and there will likely be a rising level of expectations that comparable diagnostic and treatment options will be available.

During this time period there has been an ever increasing use of advanced imaging in the diagnosis and management of a host of disorders driven by their availability and increasing capability to image anatomy, physiology and in some cases function. Unfortunately, there has also been an ever increasing cost and complexity to these imaging devices and along with other aspects of the health care system, an increasing economic burden to society. While we may defend the scientific richness of research and development in medical imaging, it has oft been pointed out that in health care; the deployment of advanced technology has resulted in higher costs where in other sectors of industry it is usually associated with decreasing costs.

There is little doubt that advances in MR technology has improved diagnostic accuracy in a host of conditions and played an important role in improving treatments. Despite these benefits, MRI has also become a symbol of excess in American health care and viewed by many as what is wrong with expensive testing - driving high profit margins to the makers and users of these devices. The traditional fee for service system, still firmly at play in the United States, has been perceived to be partially to blame by incenting volume over value. Shifting the incentives is at the core of health care reform.

The shift from volume to value in health care is perceived as a trend that eventually will eclipse event or volume reimbursed care. Value is usually defined as Quality or Outcomes over Cost. Value can be improved by improving outcomes, decreasing costs or ideally accomplishing both at the same time. Market forces driven by patients, payors and the government are challenging traditional event reimbursed care with episode or bundled based care, where all activity related to the work up and care of a patient with a certain disorder for a specified period time is reimbursed with a single payment. This reimbursement strategy closely evaluates all activity for its worth and seeks to reduce unnecessary activity and variations in patients care. The less unnecessary activity, the lower the costs and greater opportunity for a positive margin from a single payment. The next logical step is population based care where larger patient populations are managed as to total cost.

These changes are likely to have a profound impact on the development and subsequent use of imaging in patient care. The high revenue associated with advanced imaging has driven industry to develop and produce and the clinical environment to be less critical of the frequency of deployment. When the value equation becomes the guiding force, the deployment of a diagnostic or interventional act will require it to have some measurable impact on the outcomes, absent that, its elimination will have a positive impact on the cost. In this world, use without proof is becoming less tenable. Decreased utilization and likely concomitant reduced reimbursement will reduce R&D and clinically supported new application studies.

The response to these changing market forces is not complicated but will require real change. When reviewing the levels of diagnostic efficacy, we have become quite proficient in substantiating the first three steps; technical and safety, diagnostic accuracy and diagnostic thinking. (2) What is now required is a heightened focus on how diagnostic testing effects therapeutic thinking or improves validated and substantiated interventions.

While this will be challenging, it is critical. The diagnostic test cannot be viewed in isolation but has to be considered in light of the patient's trajectory and disease process. It is likely we will see more and more standardized approaches to the diagnosis and treatment of disease process that will require more rigorous evidence basis. Does the test or treatment truly impact the disease course and how does it affect therapeutic thinking. In most cases this will mean less medicine although in some, more. For Instance, imaging in patients with low back pain absent red flags is not supported or indicated. If followed, this would mean a lot less MR studies. On the other hand, the use of MR in the evaluation of hyper acute stroke, currently the province of CT because of its ease of implementation, can have a significant positive impact on patient outcomes by segmenting the patient population into those interventions it can help and those it cannot.

This last consideration is an important opportunity for imaging in the future – that is going beyond diagnosis to segmenting and stratifying patients into cohorts, based on imaging findings, that may have different outcomes and responses to the same treatment. I would argue then our lot in the future is deploy diagnostic testing more judiciously and at a low cost while at the same time trying to extract more therapeutically important information.

We will begin to assume more and more economic risk in this shift from volume to value and a major question is whether industry can make this switch of moving from volume to value with us.

References:

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