

New Technology & Health Care Costs

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The rising costs of healthcare in many parts of the world, often coinciding with increased technology (1,2), are leading some policymakers to increased consideration about the affects, both positive and negative, of technology on the efficacy of healthcare. While problems and solutions vary between countries, and sometimes even communities, it is helpful to reflect on the value of MR technology.

The denominator of value is the total operating cost of the MR system over (e.g.) a 10-year period. This can be split (very) roughly into four parts of equal magnitude, each on the order \$1-2M per scanner (although this of course varies widely). First is the cost of the system itself. Second is the cost of the techs, and pro-rated clinical support staff (e.g. nursing) and clerical and administration support staff over roughly 10 years. The third cost to consider is the siting costs, annual cost of space in a hospital environment, and power consumption. A fourth cost is maintenance.

The numerator of value is more difficult to label; for a hospital, simple revenue can be calculated if the scanner is run in a fee-for-service environment. More holistic payment models, in which MR exams are part of a net cost to the provider, balanced against payments for patient outcome, require extensive study (as well as value placed on qualitative measures of quality of life, lifespan, etc.) to discuss quantitatively. From larger perspectives, the impact of MR exams on public health may become even more financially abstract.

One can see that a quantitative discussion about the effects of technology on Healthcare costs becomes difficult to assess, revealed in part by the dramatic lack of scientific evidence our field has generated over simple things like "does a 3T scanner improve patient outcomes over a 1.5T scanner" in any particular area of Medicine/Health. Discussion around these topics will also include a brief overview of "Full Speed MRI", a project by our lab to impact the value of MRI by substantially reducing exam times, including the challenges to its true clinical impact.

Finally, I will present an initiative being considered for ISMRM to help our society become a leader in studying the clinical value of MR, as well as provide more accurate information to the members about clinically impactful areas of research.

1. Emanuel EJ, Fuchs VR. The perfect storm of overutilization. *JAMA* 2008;299(23): 2789–2791. □
2. Hendee WR, Becker GJ, Borgstede JP, Bosma J, Casarella WJ, Erickson BA, Maynard CD, Thrall JH, Wallner PE. Addressing Overutilization in Medical Imaging. *Radiology* 2010; 257(1): 240-245.