

## Comparison of True Technical Costs of MRI and CT

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**Target Audience:** Radiology practices that utilize MRI and clinicians who are considering MRI to evaluate pathology in their patients.

**Purpose:** MRI is often viewed as a last resort imaging modality secondary to misconceptions by ordering clinicians about its cost and limited availability compared to CT. Often, multiple ancillary imaging services are ordered prior to MRI as routine workup that generate incomplete/inaccurate diagnostic information, patient inconvenience, large costs for the healthcare system, and delayed care. MRI cost considerations are also important for Radiology practices in examining purchasing and utilization decisions.

**Methods:** With institutional consent, detailed analysis of the multiple variables that contribute to the technical cost of operating a single 3T magnet was undertaken including capital costs, consumable costs, overhead costs, staffing costs and maintenance and service expenses. Costs associated with acquisition and operation of an MR scanner were evaluated and cost per minute of scan time over the first 15 minutes as well as the cost for each additional minute up to 1 hour was determined. Assumptions for calculation included a 6.5 year equipment life cycle with purchase cost at MSRP, 14 hours of operating time per day, and 10% interest and service expense. Reference comparison was made to cost of CT scanning using identical expected cost center parameters.

**Results/Discussion:** MRI cost per minute is shown in Figure 1. The cost per minute is linear at \$3.13 with a prominent increase at 10 minutes accounting for the point of contrast injection, which is the largest incremental cost for an MR exam. The cost of a 15 minute MRI with contrast is \$106 versus \$99 for a 5 minute CT with contrast (cost is comparable secondary to slightly higher cost of CT contrast compared to gadolinium). Contrast media accounts for 52% of MRI costs at 20 minute scan duration and 26% of costs at 60 minute scan duration.

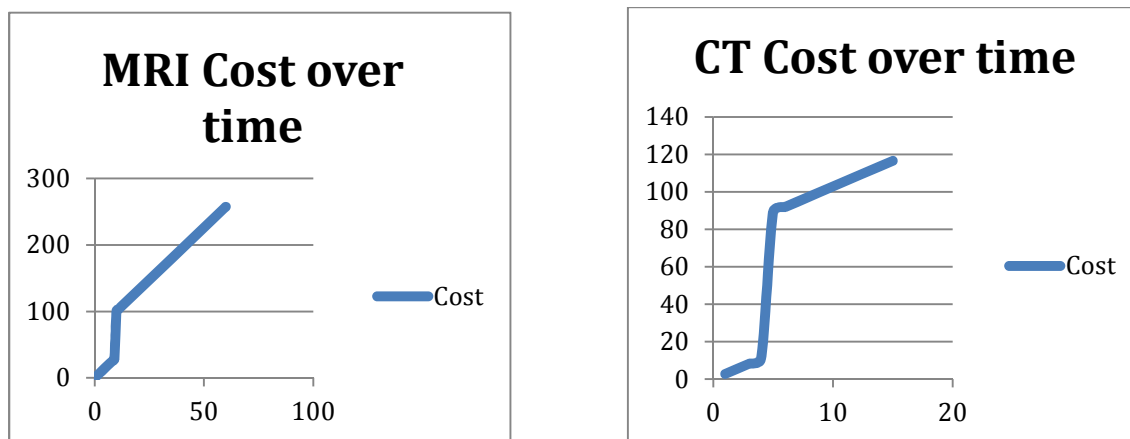


Figure 1: Cost of CT and MRI over time with prominent increase at the time of contrast injection.

### Conclusion:

The cost calculation of \$3.13 per minute for MRI shows the relatively small contribution of capital and staffing to MRI cost as well as the surprisingly similar cost for MR and CT. Detailed evaluation and dissemination of the true cost per minute of MRI may help influence more targeted examinations at higher magnet strength/resolution, impact workspace allocation and contrast usage, as well as drive ordering providers to consider MRI earlier in the diagnostic algorithm given comparable costs to CT for short exam durations.

### References:

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