OBJECTIVES: To estimate the potential unmet need for Magnetic Resonance Imaging (MRI) among Medicare patients with pacemaker implants, via the prevalence of diagnoses and conditions for which MRI is the preferred investigation method.

METHODS: The data analyzed comprised fee-for-service portion of the 2008 Medicare patient population, aged 65 years and above. Using this sample, two issues were examined: the prevalence of the diagnoses for which MRI is the preferred imaging modality, and the uptake rates of all imaging modalities for MRI-indicated beneficiaries with pacemaker implants compared with those having no implants. For each of those diseases for which MRI is the preferred modality, we also identified any trade-offs between lower MRI rates and higher rates for other imaging modalities in pacemaker-implanted compared with non-implanted patients. Further data analysis was done after adjusting for the differences in the risk of comorbidities between patient groups. Finally, reimbursement rates for imaging services in Japan were applied to demonstrate the economic impact.

RESULTS: Patients with implants were more likely than non-implant patients to have medical disorders which require the use of MRI. There was almost no use of MRI in the pacemaker-implanted population, whereas 13% of patients without any kind of implant received an MRI in 2008. Clinical practice appears in line with the combination for MRI in pacemaker patients. Cancer of the CNS and suspected Stroke are conditions which require timely, accurate imaging for good therapeutic decision making. A total of 73% and 41% of non-implanted subjects received whole body MRI for these conditions respectively, compared with 1% of paced subjects for each disease. Similar diagnostic discrepancies were observed for Motor disorders, Dementia, Chronic orthopaedic pain and Spinal disorders. Pacemaker patients also had 25% more co-morbidities than non-implant patients. Even after accounting for the higher rate of co-morbidities, pacemaker patients were found to consume more imaging diagnostic services than non-implant patients. When conversion of usage to imaging diagnostic services to cost was done, the incremental annual imaging costs for each pacemaker patient was found to be ¥23,644 more than a non-implant patient, but ¥5,579 more than a non-implant patient when co-morbidity risk was accounted for. Therefore, the cost implication of an MRI-safe pacemaker looks cost saving.

CONCLUSIONS: There seems to be a large unmet clinical need for pacemakers and other implanted cardiac devices which allow MRI to be used as a diagnostic method. The very high rate of MRI use in non-implanted patients with acute, progressive and often fatal conditions of stroke and cancer, and its absence in use of the same patient groups with implants is a concern. The use of MRI conditional cardiac devices would facilitate greater diagnostic method choice and probably even some cost savings.

Abstract #37675
ASSSESSMENT OF DIAGNOSTIC NEED FOR MAGNETIC RESONANCE IMAGING (MRI) IN MEDICARE PATIENTS WITH PACEMAKER IMPLANTS

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Figure 1: Percentage (%) of Patients with Diagnoses for which MRI is Indicated

Figure 2: Use of MRI in Patients with Pacemaker implants vs. those with No implants

Figure 3: Differences in Co-morbidities between Pacemaker vs. Non-implant patients

Figure 4: Annual Number of Imaging Services Per Patient with an Indication for MRI

Figure 5: Nett Differences between Pacemaker and Non-implant Patients in Annual Number of Imaging Per Patient with Indications for MRI

Figure 6: Nett Differences (in Japanese Yen ¥) between Pacemaker and Non-implant Patients in Annual Cost per Patient who has an Indication for MRI

When conversion of usage to cost was done, pacemaker patients were found to cost about ¥23,644 per patient per annum versus non-implant patient. However when co-morbidity risk is accounted for, the differences reduced to ¥5,579 per patient per annum versus non-implant. Therefore, the cost implication of an MRI-safe pacemaker looks cost saving.

There was almost no use of MRI in the pacemaker-implanted population, whereas 13% of patients without any kind of implant received an MRI in 2008. Clinical practice appears in line with the combination for MRI in pacemaker patients. Cancer of the CNS and suspected Stroke are conditions which require timely, accurate imaging for good therapeutic decision making. A total of 73% and 41% of non-implanted subjects received whole body MRI for these conditions respectively, compared with 1% of paced subjects for each disease. Similar diagnostic discrepancies were observed for Motor disorders, Dementia, Chronic orthopaedic pain and Spinal disorders. Pacemaker patients also had 25% more co-morbidities than non-implant patients. Even after accounting for the higher rate of co-morbidities, pacemaker patients were found to consume more imaging diagnostic services than non-implant patients. When conversion of usage to imaging diagnostic services to cost was done, the incremental annual imaging costs for each pacemaker patient was found to be ¥23,644 more than a non-implant patient, but ¥5,579 more than a non-implant patient when co-morbidity risk was accounted for. Therefore, the cost implication of an MRI-safe pacemaker looks cost saving.