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The Budget Impact of the DISCERN™ Diagnostic Test for Alzheimer's Disease in the United States

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Abstract : Alzheimer's Disease (AD) is a degenerative brain disease characterized by memory loss and cognitive decline that presents a substantial economic burden for patients and health insurers in the US. This study evaluates the payer budget impact of the DISCERN™ test in the diagnosis and management of patients with symptoms of dementia evaluated for AD. DISCERN™ comprises three assays that assess critical factors related to AD that regulate memory, formation of synaptic connections among neurons, and levels of amyloid plaques and neurofibrillary tangles in the brain and can provide a quicker, more accurate diagnosis than tests in the current diagnostic pathway (CDP). An Excel-based model with a three-year horizon was developed to assess the budget impact of DISCERN™ compared with CDP in a Medicare Advantage plan with 1M beneficiaries. Model parameters were identified through a literature review and were verified through consultation with clinicians experienced in diagnosis and management of AD. The model assesses direct medical costs/savings for patients based on the following categories: •Diagnosis: costs of diagnosis using DISCERN™ and CDP. •False Negative (FN) diagnosis: incremental cost of care avoidable with a correct AD diagnosis and appropriately directed medication. •True Positive (TP) diagnosis: AD medication costs; cost from a later TP diagnosis with the CDP versus DISCERN™ in the year of diagnosis, and savings from the delay in AD progression due to appropriate AD medication in patients who are correctly diagnosed after a FN diagnosis.•False Positive (FP) diagnosis: cost of AD medication for patients who do not have AD. A one-way sensitivity analysis was conducted to assess the effect of varying key clinical and cost parameters ±10%. An additional scenario analysis was developed to evaluate the impact of individual inputs. In the base scenario, DISCERN™ is estimated to decrease costs by $4.75M over three years, equating to approximately $63.11 saved per test per year for a cohort followed over three years. While the diagnosis cost is higher with DISCERN™ than with CDP modalities, this cost is offset by the higher overall costs associated with CDP due to the longer time needed to receive a TP diagnosis and the larger number of patients who receive a FN diagnosis and progress more rapidly than if they had received appropriate AD medication. The sensitivity analysis shows that the three parameters with the greatest impact on savings are: reduced sensitivity of DISCERN™, improved sensitivity of the CDP, and a reduction in the percentage of disease progression that is avoided with appropriate AD medication. A scenario analysis in which DISCERN™ reduces the utilization for patients of computed tomography from 21% in the base case to 16%, magnetic resonance imaging from 37% to 27% and cerebrospinal fluid biomarker testing, positive emission tomography, electroencephalograms, and polysomnography testing from 4%, 5%, 10%, and 8%, respectively, in the base case to 0%, results in an overall three-year net savings of $14.5M. DISCERN™ improves the rate of accurate, definitive diagnosis of AD earlier in the disease and may generate savings for Medicare Advantage plans.

Keywords : Alzheimer's disease, budget, dementia, diagnosis.
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