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IMPACT OF WALKING AND MOBILITY PROBLEMS ON REQUIREMENT FOR HEALTHCARE AMONG MULTIPLE SCLEROSIS PATIENTS

Rajagopalan K[1], Pike J[2], Jones E[2], Anderson P[2]
[1]Biogen Idec, Wellesley, MA, USA, [2]Adelphi Real World, Macclesfield, Cheshire, UK

BACKGROUND: Multiple sclerosis (MS) is a chronic, progressive disease, often accompanied by functional impairment due to walking/mobility problems (WMPs). The impact of WMPs on the use of direct healthcare resources therefore warrants further study. **OBJECTIVES:** Investigate the relationship between presence and severity of WMPs and hospitalisation, physician consultations, time with allied healthcare professionals and mobility aids. **METHODS:** Data were obtained from a cross-sectional study of 340 neurologists in France, Germany, Italy, Spain and the UK. Neurologists completed records on the next 10-12 consulting MS patients. Of the total 3572 patients, 2111 completed a questionnaire indicating their level of WMPs: none (n=1342), mild (n=271), moderate (n=314), or severe (n=184). ANOVA with Bonferroni-corrected t-tests were used to assess the relationship between WMPs and physician-reported data on hospital episodes, physician consultations, and healthcare professional time. Patient support, including use of mobility aids, was analyzed using Chi-square with Bonferroni-adjusted Fisher's-Exact tests. **RESULTS:** A positive association between healthcare utilisation and increased severity of WMPs was observed. Number of hospitalisations in the past 12 months increased from 0.93 in patients with no WMPs up to 1.11 (mild), 1.17 (moderate) and 1.76 (severe) (P<0.0001). Mean annual primary care consultations were 1.7 (no WMPs), 2.0 (mild), 1.9 (moderate) and 2.9 (severe) (P<0.0001). Similar patterns of health resource utilisation were observed in time spent with urologists – 0.1 (no WMPs), 0.2 (mild), 0.3 (moderate) and 0.6 (severe) (P<0.0001), and time spent with physiotherapists (2.0, 4.7, 6.9 and 9.9 respectively, P<0.0001). Similar trends were observed with use of wheelchair, walking frame, walking stick and ambulatory support from family and friends. **CONCLUSIONS:** Increased WMPs are associated with increased use of healthcare resources among MS patients. These results suggest that functional impairment due to mobility problems, including walking, may exert additional economic burden. Therapies that specifically improve patients' walking and mobility could have a positive socio-economic impact.

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BURDEN OF WALKING AND MOBILITY PROBLEMS IN MS: ANALYSIS OF CAREGIVER AND INDIRECT COSTS

Piercy J[1], Rajagopalan K[2], Jones E[1], Pike J[1]
[1]Adelphi Real World, Macclesfield, Cheshire, UK, [2]Biogen Idec, Wellesley, MA, USA

BACKGROUND: Among patients with multiple sclerosis (MS), increased disease severity of disease is associated with increased burden of caregiving and decreased employment status. Specific effects of walking/mobility problems (WMPs) on caregiving requirements and employment status are unknown. **OBJECTIVES:** Examine the relationship between presence/severity of WMPs in MS patients on: formal (paid professional) and informal (friends/family) caregiving; and indirect costs related to employment status. **METHODS:** Data were obtained from a cross-sectional study of 340 neurologists in France, Germany, Italy, Spain and UNITED KINGDOM. Neurologists completed records on the next 10-12 consulting MS patients. Among 3572 patients, 2111 completed a questionnaire indicating their level of WMPs: none (n=1342), mild (n=271), moderate (n=314), severe (n=184). Chi-square with Bonferroni-adjusted Fisher's-Exact tests assessed the relationship between WMPs and level of caregiving required and employment status. ANOVA with Bonferroni-corrected t-tests assessed the relationship between WMPs and annual days off-work. **RESULTS:** Analysis showed a positive association between severity of WMPs and caregiver requirement (P<0.0001). Patients reporting severe WMPs required more formal care (50%) compared with no WMPs (10%), mild (11%) and moderate (23%) (P<0.0001). A similar pattern was observed for informal care; no WMPS (11%), mild (14%), moderate (28%), severe (31%) (P<0.0001). Mean annual days off-work was 21(s.d.43) for no WMPs compared with 74(s.d.121) for severe WMPs (P<0.0001). 12% of patients with no WMPs had reduced weekly work-hours compared with 22%-26% among those with WMPs (P<0.0001). Only 7% of patients with no WMPs had given up work altogether compared with 29% of moderate and 38% of patients with severe WMPs (P<0.0001). **CONCLUSIONS:** These analyses highlight an increased need for formal care among MS patients with WMPs, especially those in whom they are severe. A negative impact in employment status is associated with severity of WMPs. Given that walking problems impose a strain on MS patients, friends/family and health/social care authorities, therapeutic options that improve WMPs should be a public health priority.

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HUMANISTIC AND ECONOMIC BURDEN IN TUBEROUS SCLEROSIS COMPLEX WITH NEUROLOGICAL MANIFESTATIONS: SYSTEMATIC REVIEW

Hallett L[1], Foster T[1], Valentim J[2], Blieden M[1], Liu Z[3]
[1]United BioSource Corporation, Lexington, MA, USA, [2]Novartis Pharmaceuticals, Sao Paulo, Brazil, [3]Novartis Pharmaceuticals, East Hanover, NJ, USA

OBJECTIVES: To assess current understanding of humanistic and economic burden of tuberous sclerosis complex (TSC), a rare progressive genetic disorder characterized by benign tumors in multiple organ systems. Common neurological manifestations include brain lesions, epilepsy, seizures, and mental retardation. **METHODS:** Using specified keywords related to TSC, we systematically searched MEDLINE- and EMBASE-indexed, English-language literature published between 5/2000 - 5/2010, and non-indexed materials from governmental or professional organizations. Included articles pertained to clinical, economic and humanistic burden of TSC in humans. Excluded articles were molecular biology and genetic studies, and, to eliminate lower-value studies, case reports and studies enrolling <20 TSC patients. **RESULTS:** One hundred and nineteen articles were included, with 115 on clinical burden. While no therapies prevent disease progression, treatment of TSC and its neurological manifestations remains poorly defined by guidelines and focuses on symptom management. Caregiver burden is substantial, as many parents experience stress related to children's basic needs, psychiatric diagnoses, low intelligence, behavioral problems, and seizures. While two survey studies explore caregiver burden, there are no studies on health-related quality of life in TSC patients. Also absent are cost of treatment and resource use associated with TSC, which are likely substantial for symptomatic subependymal giant cell astrocytomas (SEGAs) and medically refractory epilepsy that often require surgical resection to control symptoms and disease progression. There are no cost-effectiveness analyses or studies of indirect costs. Two analyses of the cost of genetic testing suggest that TSC is too rare to recommend population-wide screening. **CONCLUSIONS:** Few available data quantify the humanistic and economic burden of TSC. As a lifelong condition with disabling neurological manifestations and unmet clinical needs, the care and costs associated with TSC burden patients, caregivers, and society. Future research should determine total cost of disease, including probable high indirect costs of caregiver time and lost productivity.

PND20

HEALTHCARE UTILIZATION AND COSTS AMONG AD PATIENTS WITH AND WITHOUT DYSPHAGIA

Gabriel S, Tian H, Kim E, Kahler KH
Novartis Pharmaceuticals Corporation, East Hanover, NJ, USA

OBJECTIVES: To assess whether healthcare utilization and associated costs differed among Alzheimer's patients with and without dysphagia. **METHODS:** Data were taken from MarketScan Medicare Commercial Claims and Encounters and MarketScan Medicare Supplemental and Coordination of Benefits datasets. Patients with a diagnosis of Alzheimer's disease (AD) with and without a diagnosis of dysphagia between 1/01/06-12/31/08 were included. Number of ER visits, outpatient visits and hospitalizations, as well as all-cause total healthcare, outpatient, inpatient, ER, and outpatient prescription drug costs, were assessed. Cholinesterase inhibitor usage was assessed. All variables were measured in the one year post initial diagnosis of AD, at the patient level. Bivariate analyses were conducted using chi-square test (for categorical measures) and t-tests (for continuous measures) to examine differences between AD patients with and without dysphagia. **RESULTS:** A total of 95,817 Alzheimer's patients were included in the analysis: 11,748 (13%) with dysphagia, and 84,069 (87%) without dysphagia. Mean age of AD patients was 79 (std=10); 61% were female. Dysphagic patients had a significantly higher number of ER visits (1.8 vs. 1.0), outpatient visits (16.2 vs. 11.4) and hospitalizations (11.3 vs. 4.3). Total annual healthcare costs ($12,627 vs. $8,031), outpatient ($1,488 vs. $1,039), inpatient ($6,543 vs. $2,705), and ER costs ($700 vs. $414) were significantly higher for dysphagic patients (p<0.01 in all cases). No significant difference was found for outpatient prescription costs. Significantly fewer dysphagic patients used cholinesterase inhibitor (ChEI) therapy (39% vs. 51%; p<0.01), or patch formulation (2.5% vs. 3.4%; p<0.01), compared with non-dysphagic patients. **CONCLUSIONS:** Dysphagia is not uncommon among patients with Alzheimer's disease. Alzheimer's patients with dysphagia have higher healthcare utilization and costs, compared with non-dysphagic patients. In both groups, treatment with cholinesterase inhibitors was low.

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ESTIMATED COSTS OF FINGOLIMOD MONITORING FOR INDIVIDUALS WITH RELAPSING REMITTING MULTIPLE SCLEROSIS

Trautman H[1], Clark J[2], Huleatt H[1]
[1]Aventine Consulting, Marblehead, MA, USA, [2]Aventine Consulting, University Place, WA, USA

OBJECTIVES: To develop a tool to estimate the first-year per member and total health plan costs associated with fingolimod monitoring recommended by its Risk Evaluation and Mitigation Strategy (REMS). **METHODS:** Data were incorporated into an interactive tool designed to allow a health plan to estimate their costs for monitoring. The prevalence of MS was based on the literature. Default values for the proportion of patients treated with immunomodulators and fingolimod were assumed and set at 95% and 1%, respectively. Current Procedural Terminology (CPT) codes corresponding to recommended monitoring procedures were identified. Charges associated with each CPT code were identified using software designed to build a physician fee schedule based on Medicare charges and default values were set at 150% of Medicare charges. In cases where the REMS recommended that all patients undergo certain monitoring, default values were set at 100% for that monitoring. In cases where the REMS recommended individuals with specific characteristics undergo monitoring, a database analysis identifying all individuals with a diagnosis of MS in the i3 InVision Data Mart (Ingenix, Eden Prairie, MN) was used to estimate the proportion of patients who may require that specific monitoring. **RESULTS:** The tool yielded average per patient and health plan costs expected with fingolimod monitoring. The tool conservatively estimates that the average per member first-year monitoring cost for fingolimod is $1905. Based on the default values, the estimated annual costs of fingolimod monitoring for a million member health plan is $18,458. The initial cardiac monitoring was the largest contributor to the total cost of monitoring. **CONCLUSIONS:** Estimating the anticipated economic impact of fingolimod monitoring, based on its REMS, allows health plans to more closely assess the total cost of fingolimod therapy. This tool allows health plans to individualize inputs to estimate the plan-specific economic impact of fingolimod monitoring.