total costs may be much greater when the high levels of post-acute care are fully captured.

<table>
<thead>
<tr>
<th>N</th>
<th>Charges$</th>
<th>LOS</th>
<th>LTC%</th>
<th>Other Care%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>57,807</td>
<td>$8,082</td>
<td>5.6</td>
<td>34.3%</td>
</tr>
<tr>
<td>50–64</td>
<td>4,116</td>
<td>$9,396</td>
<td>5.4</td>
<td>10.4%</td>
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<tr>
<td>65–74</td>
<td>9,850</td>
<td>$8,661</td>
<td>5.5</td>
<td>23.0%</td>
</tr>
<tr>
<td>75–84</td>
<td>24,321</td>
<td>$8,128</td>
<td>5.9</td>
<td>35.1%</td>
</tr>
<tr>
<td>85+</td>
<td>19,521</td>
<td>$7,455</td>
<td>5.7</td>
<td>44.2%</td>
</tr>
</tbody>
</table>

*Updated to 2000 dollars by Medical Care component of CPI.
**Acute hospital, other facility, home care.

**IS RESIDRONATE MORE COST-EFFECTIVE THAN ETIDRONATE FOR FRACTURE PREVENTION? A COST-UTILITY ANALYSIS**

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OBJECTIVE: Only hip protectors, calcium and vitamin D therapy and bisphosphonates have been shown to reduce hip fractures with the latter having the more robust evidence. Three bisphosphonate are currently widely available but at differing costs, we compared the cost-effectiveness of the two least expensive compounds (etidronate & residronate). METHODS: We used a Markov model to compare costs and health states of 1000 women aged 75 years with a prevalent vertebral fracture, and treated with either etidronate or residronate for 3 years and then followed through until aged 100 years. We assumed treatment was only effective for the 3 years. Drug costs were taken from MIMS, fracture costs were taken from published estimates and updated to 1999 prices, with hip fracture incurring a cost of £13,000 in the first year and £7,000 in the second year. Hip fractures were assumed to be reduced by 58% as evidenced in the most recent trial and 33% for non hip and non vertebral fractures for the residronate treated group. For etidronate observational data suggests that it reduces hip fractures by 34% and non hip and non vertebral fractures by 20%. We also assumed a loss of 0.32 QALYs in the year of fracture. RESULTS: Residronate was revealed as the dominant therapy for treating women of 75 years with a previous vertebral fracture. Estimates of total cost savings per patient with a moderate vertebral deformity were £10,627 and £10,857 for residronate and etidronate respectively. Similarly, QALYs per patient gained were 7.58 and 7.56 for residronate and etidronate, respectively. Sensitivity analysis confirmed the robustness of residronate’s dominance. CONCLUSION: In the baseline analysis both treatments are cost saving. Residronate even seems to be cost saving when compared with etidronate. Thus, residronate therapy dominates etidronate, that is it saves more costs and produces more QALYs.

**ANNUAL COST OF TREATING CARPAL TUNNEL SYNDROME IN A MANAGED CARE POPULATION**

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OBJECTIVE: To determine the average annual cost of treating carpal tunnel syndrome (CTS) in a managed care population. METHODS: All subjects contained within PharMetric’s Integrated Outcomes database possessing a diagnosis of carpal tunnel syndrome (ETG = 0174 or 0175) during 1996–1999 were eligible for study inclusion. Patients were required to have 12 months of data following the first (index) CTS diagnosis present. Patients less than 18 years of age and greater than 90 years of age were excluded. Carpal tunnel syndrome specific and total pharmacy charges were captured for the study period. RESULTS: 82,176 patients met the inclusion criteria. The mean age was 46.5 years (SE = 0.047), and 70.6% of the sample was female. 82% of patients with CTS did not require surgery. General practitioners/external medicine account for 73.0% of CTS diagnoses in a given year. Before diagnosis, the mean annual CTS specific charges per patient was $86.14 (SE = 2.47). After diagnosis, the mean annual CTS specific charges per patient was $1186.11 (SE = 6.51). Post diagnosis, inpatient charges accounted for 40.6% of CTS-related expenses, while outpatient and pharmacy charges accounted for 55.5% and 1.7% respectively. Oral steroid use increased slightly from 16.8% to 18.7% after diagnosis of CTS, while NSAID use increased from 36.3% to 51.2%. Outpatient steroid injections doubled from 5.7% to 11.9% after diagnosis of CTS. Soft tissue disorders and osteoarthritis were the two comorbidities that occurred most frequently with a diagnosis of CTS with 22.8% and 12.7%, respectively. Oral steroid use increased slightly from 16.8% to 18.7% after diagnosis of CTS, while NSAID use increased from 36.3% to 51.2%. Outpatient steroid injections doubled from 5.7% to 11.9% after a diagnosis of CTS. Soft tissue disorders and osteoarthritis were the two comorbidities that occurred most frequently with a diagnosis of CTS with 22.8% and 12.7%, respectively. CONCLUSION: In the baseline analysis both treatments are cost saving. Residronate even seems to be cost saving when compared with etidronate. Thus, residronate therapy dominates etidronate, that is it saves more costs and produces more QALYs.

**DIABETES**

**VARIATIONS IN MEDICATION UTILIZATION IN AN OLDER DIABETIC POPULATION**

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OBJECTIVE: To examine health status factors associated with utilization of different types of antidiabetic medication in managed-care enrolled older adults, and in turn, to study the association between antidiabetic medi-
culation utilization and overall health care service use. METHODS: A prospective longitudinal cohort study employing robust multiple regression analyses was conducted over a 2-year post-enrollment period in 762 managed care enrolled diabetic older adults, for whom complete prescription refill data were available. Patients completed a comprehensive health risk screen measuring self-reported health perception, falls, lifestyle, depressive symptomatology, and pre-enrollment health care service use at time of enrollment in the plan. We used the medication possession ratio and total annual health care charges as measures of post-enrollment antidiabetic medication and health care service use. RESULTS: We found that in this population, annual medication possession rates were nearly 57% for oral hypoglycemics, as compared to approximately 40% for both insulin as well as insulin sensitizers. Among antidiabetic medications, only insulin possession decreased across time \((P < 0.05)\). Older adults with increased number of diabetic medications, as well as reporting to have had falls under utilized all antidiabetic medications \((P < 0.05)\). Patients with increased age and comorbidity under utilized insulin sensitizers \((P < 0.001)\). Self-reported health status was predictive of total health care service utilization in this population, but not antidiabetic medication use. After controlling for the significant effects of health status, comorbidity severity, and number of medications, a 10% increase in the use of oral hypoglycemics was associated with a 3.5% decrease in total annual non-prescription related health care charges \((P < 0.001)\). CONCLUSION: There seem to be significant differences in utilization patterns of different antidiabetic medications in this older adult population, with a clear decrease in health care service use associated with increased utilization of oral hypoglycemics. Improving medication adherence could potentially reduce avoidable medical costs in similar populations.

**PDB2**

**COST-EFFECTIVENESS OF A NEW HUMAN DERMAL REPLACEMENT FOR THE TREATMENT OF DIABETIC FOOT ULCERS: THE CASE OF FRANCE**

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OBJECTIVE: To assess the cost-effectiveness of a new human dermal replacement (Dermagraft—D) compared with current practice (CP). METHODS: A Markov model was developed, to simulate the health status of a cohort of 100 patients with a diabetic foot ulcer, during 52 weeks. The health states considered are: healed, same site recurrence, unhealed not infected, cellulitis, osteomyelitis, amputation and death. The set of transition probabilities is derived directly from the US clinical trial. The costs of each health state were estimated by a Delphi panel of diabetologists (direct costs only in a societal perspective). RESULTS: The total number or ulcers healed is first ulcers healed \((D: 76,38; \text{median time to heal—MTH: 14–15 weeks vs CP: 69,35; MTH: 28–29 weeks})\) plus recurrences which are subsequently healed within the 52-week period \((D: 25,24; MTH 3–4 weeks; CP: 14,29 MTH: 5–6 weeks)\) are significantly different. The average expected cost per patient \((C/E)\) with CP for the 52 weeks period considered is 47,418 French Francs \((FF)\) vs 54,384 FF for D group \((including 18,200 FF for D treatment and 36,184 FF of conventional treatment)\). Because D heals more ulcers, the average cost per ulcer healed is lower \((53,522 FF vs 56,687 FF)\). The incremental cost-effectiveness ratio of D \((\Delta C/\Delta E)\) equals 387.84 FF. CONCLUSION: Human dermal replacement is cost-effective because it offers an opportunity to heal ulcers for less than the price that is already paid by the collectivity, using standard practice \((56,687 FF)\).

**PDB3**

**USE OF BOOTSTRAP IN A COST-OF-ILLNESS STUDY TO DERIVE ACCURACY OF ESTIMATES**

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OBJECTIVE: The CODE-2 study provided costs for patients with diabetes mellitus type 2 in Germany. The aim of this analysis is to assess the accuracy of these estimates. METHODS: The German arm of CODE-2 was based on a representative sample of 809 diabetic patients. Treatment strategies, resource use and costs were investigated for the year 1998. Patients were grouped in 5 strata based on their complication status, which was assumed to be the main cost factor. Rare cost driver groups were over-represented in order to obtain higher accuracy of estimates. For extrapolation on a population level, the results were weighted according to real prevalence data on complications estimated in a pre-study. Results were calculated as a weighted average from the mean in each stratum. Because the degree of precision of these estimates was not measurable with the usual statistical methods, bootstrap estimates were computed for lower and upper bounds of 95% confidence intervals taking 10,000 independent bootstrap samples. RESULTS: Bootstrap estimates were stable after 10,000 replicate samples. CONCLUSION: Bootstrap confidence intervals show a remarkable accuracy of estimations performed in this study. So combination of a weighted stratification by cost factor followed by bootstrapping estimation is an appropriate method for analysing the average of highly variable parameters such as costs of diabetes.