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OBJECTIVES: The U.S. Centers for Medicare and Medicaid Services (CMS) has adopted a Medicare quality incentive pay-for-performance concept. This study explores CMS’s implementation of the Physician Quality Reporting Initiative (PQRI), including measurement development, reporting guidelines and the proposed methods by which physicians will be compensated for participation. METHODS: PQRI guidance provided by CMS was collected, arranged in order of issuance, abstracted and analyzed. Ongoing corrections and modifications were noted as appropriate. A compilation of suggested PQRI-relevant resources also was created as part of the project. RESULTS: The Tax Relief and Healthcare Act (TRHCA) Division B, Title I, Section 101 provides statutory authority for PQRI. The TRHCA defines eligible professionals; quality measures themselves, as well as reporting methods and processes for obtaining bonus payment. The initial reporting period commences July 1, 2007 and ends December 31, 2007. During this period 74 quality measures may be reported. If 4 or more measures are applicable to the physician practice, the practitioner must report at least 3 correctly for 80% of applicable cases. If 3 or fewer measures are applicable to the practice, the practitioner must report each of them correctly for 80% of the cases. Cases may be either visits or patients, depending upon the particular measure. Professionals that report successfully are eligible for a 1.5% bonus payment (pay-for-performance), subject to a cap. The bonus payment calculation method is determined by using total allowed charges for covered professional services that are furnished during the reporting period and are paid under the CMS Physician Fee Schedule. CONCLUSION: Physician practices must adhere to the appropriate method for coding and reporting quality measures in order to obtain relevant bonus compensation. It is vital for physician practice decision-makers to understand and comply with the CMS reporting methodology in order to reap the accompanying monetary compensation.

Guidelines for Ensuring Degrees of Validity in Health Economic Models

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OBJECTIVES: Greater emphasis for economic evaluations in health care reimbursement decision-making has brought about the need for models that are accurate and methodologically sound. Although guidelines exist suggesting appropriate methods for model validation, there remains a paucity of practical guidance outlining steps to ensure that outcomes have been appropriately validated. The objective was to establish a process outlining a series of practical tests to ensure consistent model validation. METHODS: A systematic search of the literature was conducted to identify modeling guidelines and published modeling studies discussing validation techniques. Results from the literature search were used to develop practical steps to ensure consistent model validation. RESULTS: A list of validation tests were compiled and collated following a review of 15 guideline publications on model validation. Model validation should not only encompass checking for calculation errors or structural inconsistencies, but also include a complete synthesis of the evidence-based data used to produce results. Initially, the model structure should be reviewed for face validity, assessing the economic and clinical assumptions that include consulting scientific experts, external to the model development process. Secondly, convergent validity should be conducted where a series of tests are performed comparing if results from other independently developed models draw similar conclusions. Internal validity involves a series of procedures to ensure the basic model framework and mathematical calculations are consistent. Test-runs should be performed including a replication test, and extensive sensitivity analyses, whereby a series of extreme/hypothetical

Evaluation of the Perspective and Type of Studies in Animal Health Economics

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OBJECTIVES: Importance of animal health economics has been widely acknowledged. The objective of this project was to evaluate the perspective and type of analyses used in animal health economic studies. METHODS: An electronic search in EMBASE and MEDLINE was conducted from 1987 onwards, using the key words economic, cost-effectiveness, cost-benefit, cost-minimization, cost-cost analysis, combined with the respective kind of animal (cow, pig, horse, dog, cat). Among 631 articles, 68 abstracts were included for this review (34 studies in cows, 13 in pigs, 3 in horses, 14 in dogs, 4 cats). The others did not represent health economic studies. RESULTS: Study perspective was stated in only one abstract but could be assumed from the content in the other studies, being that of the animal owner in all but one. Cost-effectiveness was the type of study most often used (37/68), followed by cost-benefit studies (22/68). Again, the kind of study often had to be assumed as it was only mentioned in 22% of the abstracts (15/68). The main field of investigation was that of immunization. CONCLUSION: The fact that fundamental information on the perspective or type of study was rarely stated in the abstracts might be due to the fact that guidelines on animal health economics are missing. The predominant perspective, namely that of the animal owner differed from those found in human health economics. It reflects the fact that insurance or public coverage of costs is not widespread in animal health; accordingly the owner is the main payer. If compared with human health economics the share of cost-benefit analyses was higher, as there is a market price especially for farm animals and their products. Further efforts in this field might improve quality of study presentation and probably raise interest for health economic studies on veterinary pharmaceuticals.

Abstracts
assumptions are explored. Further assurances of internal validity include the replication of the model in another software. CONCLUSION: Approaches to model validation should be included as part of any publication. Budgetary and time allocation should take model validation into account given the increased importance placed on the outcomes of health economic models.

**BIBLIOGRAPHIC REVIEW OF DISCRETE EVENTS SIMULATION STUDIES IN HEALTH TECHNOLOGY EVALUATION**

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OBJECTIVES: The use of computational models to assess therapeutic alternatives has been growing in importance in the economic evaluation of health technologies and services during the last years, becoming a more relevant and helpful tool for decision making in health care. Until now, two types of models have been used: decision trees and Markov chains, nevertheless, they both show important limitations when addressing complex processes or pathologies, and that’s why interest in, and use of discrete event simulation (DES) is growing, specially in economic evaluation and medical decision making related journals. The objective of this study was to perform a bibliographic review of DES studies, and to evaluate their advantages and limitations where appropriate.

METHODS: A structured bibliographic search using Medline, principally, was performed to search in the scientific literature the keywords: Health technology, computer simulation, economic evaluation models and discrete event simulation. A system of selection of the search based on authors peer reviews and expert criteria was established. RESULTS: Forty-two papers were selected using DES alone or combined with Markov chains and decision trees. The result reflects the increasing number of the DES in after 1998, specially in the last 5 years. A classification of the selected articles was performed. These classification revealed the use of secondary data in these model development. Studies come in highest percentage from UK, USA, and Holland, the temporal perspective was from less than 1 up to 50 years; sensitivity analysis was performed in the mentioned studies and Simul8, Arena, MS Excel were the most frequent used softwares. CONCLUSION: The results reflect that the use and acceptance of DES is growing internationally in health technology and health care analysis, so it would be an useful tool to simulate some complicated system and processes.

**MUSCULAR-SKELETAL DISORDERS—Cost Studies**

**DIRECT HEALTH COSTS OF TREATING PATIENTS WITH FIBROMYALGIA IN PRIMARY CARE SETTINGS (PCS) UNDER ROUTINE MEDICAL PRACTICE: A COST OF ILLNESS STUDY USING A CLAIM DATABASE IN SPAIN**

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OBJECTIVES: To analyze a health resources utilization claim database in order to derive direct health costs of treating patients with Fibromyalgia under routine medical practice at PCS. METHODS: A 12-month retrospective study was performed using computerized medical records from a health provider database; BSA. Analysis was conducted from a 3r-payer perspective during the year 2006. Health resources utilization included both those of the primary care (PC) level (drugs, complementary tests, medical visits, etc.) and those of the specialized care (SC) as well. SC included emergency visits, hospitalizations, and tests and drugs prescribed by specialist. Men and women above 18-years included in the data base (n = 63,526) were analyzed. Fibromyalgia was diagnosed according with CIE-10 criteria. Descriptive statistics and ANCOVA models were used. RESULTS: One-thousand-eighty-one subjects [96.7% women, 54.2 (10.1) years] fulfilled CIE-10 criteria for Fibromyalgia amongst the 63,526 database subjects: 1.7%. Charlson index was no different in Fibromyalgia patients vs controls (the rest of sample analyzed), p = 0.212. After adjusting by age and sex, yearly total health costs per patient were €614 higher (+66%) on average in Fibromyalgia than in controls; €1,350 (95% CI: 1,341–1,760) vs €937 (927–945), p < 0.0001. Both PC and SC annual costs were significantly higher in Fibro patients; mean per patient adjusted difference of €395 (276–513, p < 0.0001) and €219 (74–364, p = 0.003), respectively. Total annual drug costs were considerably higher in patients with Fibromyalgia; €591 (485–696) vs. €361 (356–366), p < 0.0001. Age correlated moderate but significantly with yearly PC, drug and total per patient health costs; r = 0.324, 0.325, and 0.278, respectively, p < 0.001 in all cases. CONCLUSION: Compared with controls, subjects with Fibromyalgia were associated to higher annual total direct health costs in the primary care setting. Drugs represented a considerable portion of health resources costs devoted to these patients. Age, but not sex, was associated with higher costs.