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Comparative cost analysis of inpatient integrative medicine—Results of a pilot study

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ABSTRACT

Background: Costs of integrative treatment alone and in comparison with other treatment approaches have scarcely been reported in the past. This study presents results of a comparative cost analysis of an inpatient integrative medicine treatment costs.
Methods: Data from 2006 for inpatients referred to a Department of Integrative Medicine in Germany were used. Case-related treatment costs were calculated, and transformed into Casemix-Indices and revenues per DRG. Costs were compared between departments at the same hospital and between different hospitals using univariate statistics and Chi-Square tests.
Results: In total 1253 inpatients (81.4% female, 61.1 ± 14.4 years) were included in the current analysis. Most patients were treated for diseases of the musculoskeletal system (57.2%), followed by diseases of the digestive system (11.4%), and diseases of the nervous system (10.4%). The department received an additional payment for most of the patients (88.0%), which led to an effective appreciation of 10.8% per case compared to the standardized Casemix-Index. In-house comparisons with other departments found the department in close vicinity to the departments of Internal medicine with regards to CMI and mean revenue, however the Patient Clinical Complexity Level was significantly lower in the Integrative medicine department. The interhospital comparison revealed comparable Casemix-Index and DRG-revenue, however the additional payment increased the mean revenue significantly.
Conclusion: Modern integrative in-patient treatment is mostly cost-equivalent to conventional treatment. Cost effectiveness studies should be considered to further investigate the potential of integrative in patient treatment.

1. Introduction

Integrative inpatient treatments have a long tradition in Germany with the first cold-water spa for inpatients being established in 1822 by Vinzenz Prießnitz in Gräfenberg/Freiwaldau in Silesia.[1] Various other hospitals and health spas for naturopathic and homeopathic treatment were established soon thereafter.

The analysis of treatment costs for an integrative medical treatment compared to conventional medical treatments has been recognized as an important contribution to complementary medical research. A first "costing analysis" was conducted by the so called "Dresden Experiment" in 1938, where the length of stay and the respective costs were compared between a naturopathic medicine ward and a conventional one. According to Krauß.[2] the duration of stay in the department for true naturopathy in Dresden in 1938 was 22 days, while in the conventional internal medicine department patients stayed 21 days on average. However average costs of medication per day were 58.0%–87.5% higher at the conventional site compared to the naturopathic site. Although this approach seemed reasonable and straightforward only a few studies in integrative medicine since then have focused on health economical aspects. Depending on the in- and exclusion criteria reviews found that between 6 and 338 studies conducted between 1984 and 2010 dealt with health economics. [3–9]

Thus it is not surprising that White & Ernst in 2000 expressed the need for high quality health economic studies, which "could provide conclusive evidence of differences in costs and outcomes between other complementary therapies and orthodox medicine".[9] And ten years later Witt demanded more clinical and health ser-

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vices research "which includes economic data to provide realistic cost estimates for future healthcare".[10]

Diagnose-related groups (DRGs) are frequently used for costing analyses in Germany, and other countries around the word.[11,12] Such data provide an evidence base for policy makers in funding authorities. However comparative costing analyses based on valid data have only marginally been used for integrative inpatient care.[13,14]

The present comparative costing analysis of an inpatient integrative medicine treatment makes use of DRG data and for the first time analyses data from a department of integrative medicine by means of an inter- and intra-hospital comparison (Fig. 1).

2. Methods

Our costing analysis is based on the German DRG-system. DRGs are used in Germany since 2002 to categorize and reimburse hospitalization costs. DRGs are mandatory for all German hospitals except for mental health care institutions, and are defined by the patient's diagnoses, gender, age, treatment procedures, complications, comorbidities and further factors related to the hospitalization. Each DRG is assigned to a fixed cost weight, and the weight is calculated by the Institute for the Hospital Remuneration System (InEK) based on empirical data provided by sample hospitals. Based on these relative weights predetermined reimbursement rates for individual cases are defined which are converted into actual payments.[15] Initially starting with 664 DRGs in 2002 the number of DRGs increased to 878 in 2005 and 1195 in 2010.

To adjust the average costs per patient for a given hospital relative to the adjusted average cost for other hospitals, in Germany a Case-Mix Index (CMI) is calculated which reflects the diversity, clinical complexity and the needs for resources in the population of all the patients in the hospital. A CMI greater than 1 indicates that the adjusted costs per patient are lower and a CMI lower than 1 indicates higher adjusted costs. Thus if a Hospital has an average cost per patient of 1000 € and a CMI of 0.67, their adjusted cost per patient is 1000 €/0.67 = 1500 €.

Another key feature of the German DRG-System is given by the so called "Operationen- und Prozedurenschlüssel" (OPS) which is the German modification of the International Classification of Procedures in Medicine (ICPM) and serves as a basis for inpatient services of German hospitals. Since an integrative medicine treatment requires an intense use of resources a special code was established (OPS 8–975). If a patient was sufficiently treated with these procedures (i.e. two hours per day of massages, mind-body therapies, naturopathic treatments) an additional non-weighted payment ZE-26 was generated[16] to cover the additional resources needed for this treatment. This additional payment is to be negotiated and agreed on by each hospital individually with health insurance companies as a part of the remuneration negotiations according to the hospital remuneration act.[17] These additional payments were also considered in our calculation. Another special characteristic of the German DRG system is given by the Patient Clinical Complexity Level (PCCL) calculated from DRG and cost data on a scale from 0 = no complication to 6 = catastrophic clinical complexity.

In our study cost data from the year 2006 as reported to the Institute for the Hospital Reimbursement System (InEK) as described in the Costs Accounting Manual for Hospitals was analyzed for inpatients referred to the Department of Integrative Medicine, Kliniken Essen-Mitte in Essen, Germany. The Department was established in 1999, as an acute care inpatient ward for internal medicine. The department combines conventional medicine with evidence-based complementary medicine, and Mind/Body therapies (e.g. lifestyle modification, nutrition, stress reduction, exercise, and elements of cognitive behavioral therapy) in the treatment of chronic diseases such as chronic pain syndromes, rheumatological diseases, gastrointestinal diseases, and cardiovascular conditions.[18] Patients need a referral from their treating physician.

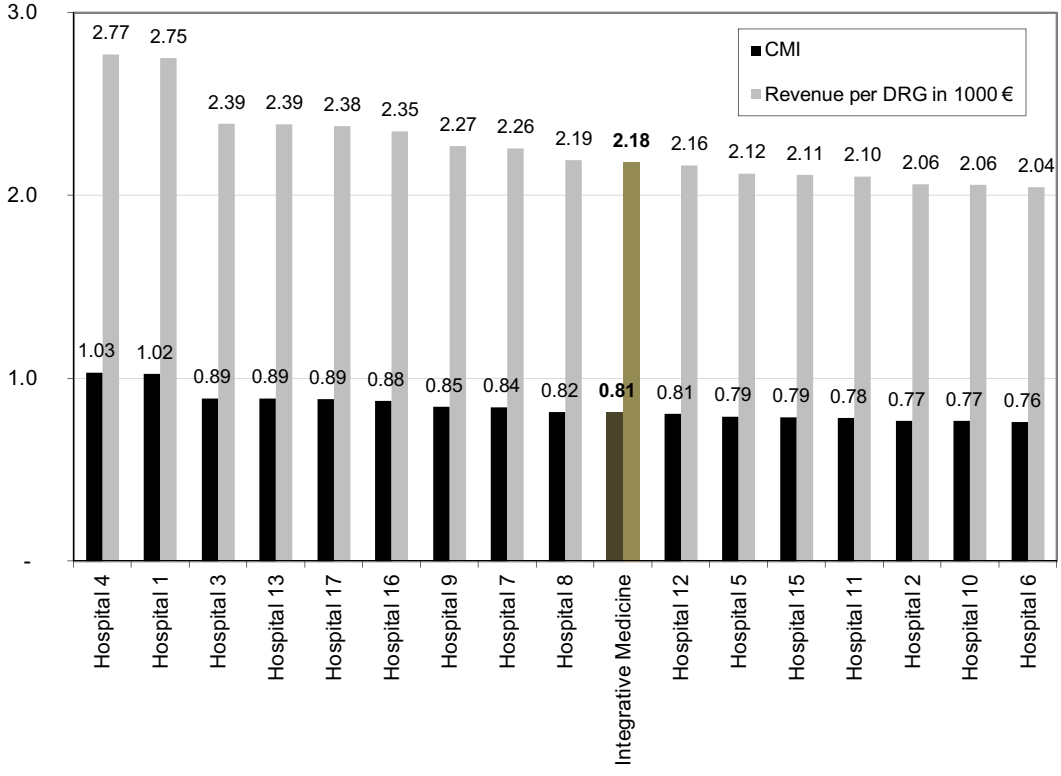

Fig. 1. CMI and Revenue per DRG in interhospital comparison of equivalent hospitals of Northrhine-Westphalia.