

Abstract

EVA-Reha: the software based solution for process and target oriented quality control in rehabilitation: evaluation of the effects in inpatient cardiological rehabilitation.

Part 1: EVA-Reha

EVA-Reha (,Evaluation of Rehabilitation') is a documentation software developed by MDK Rheinland-Pfalz, which has been applied by numerous rehabilitation facilities since 2006 all-over Germany. The application of EVA-Reha delivers output data for each person undergoing rehabilitation that can be further evaluated according to each institution.. Furthermore, the software is applied for various indication cases: neurology, geriatrics, cardiology and orthopedics, currently in more than 90 rehabilitation facilities. .

Apart from baseline data such as age, sex, duration of rehabilitation, pre-treatment at the hospital and socio demographical data, various parameters are collected that serve to illustrate the severity of cases. In order to display the effect of rehabilitation, laboratory data, functionality parameters, activities and self assessment scores of the persons undergoing rehabilitation are assessed at the beginning and gathered at the end of the treatment. The rehabilitation's success for each individual patient can be measured based upon the comparison of both the previously mentioned findings. It is carried out target oriented and the associated level of success is registered.

Furthermore, the therapeutical benefits are consistently recorded based on single cases with the help of the KTL catalogue (catalogue of therapeutical benefits - version 2007 of the German pension insurance). The benefit system gets transparent and a relation to the achievement of the therapeutic goal exists. Therefore an assessment of the resource consumption is practicable.

The EVA-Reha results serve as internal quality control for each of the associated facilities...

The evaluated data are qualitatively reviewed with funding agencies (health insurances) and care providers, and serve as a basis for targeting specific arrangements between health insurances and rehabilitation facilities aiming at further quality improvement. They are considered for commission negotiations and severity-adapted case allowances. The rehabilitation's duration is assessed according to certain indicators, which are gathered based upon associated rehabilitation characteristics.

The evaluation serves to comparing hospitals,. EVA-Reha turns rehabilitation into an evident process, at the end of which the effects of rehabilitation-benefits can be assessed considering potential confounders.

Health insurances are strongly competitive and thus, rehabilitation funding has to be implemented - like all medical attainments –based on cost effectiveness. The insured persons expect a beneficial offer with assured quality. The application of EVA-Reha enables for the first time to draw several comparison criteria among different facilities considering the rehabilitation effects and the appropriate resource input.

Using the example of a cardiological rehabilitation outlined below, the effect of rehabilitation is appraised with the help of a multiple outcome criterion and thus, enabling benchmarking among facilities.

Part 2: Results and Evaluation

Question

In order to display the results' quality in cardiological rehabilitation, indicators for result quality have to be determined and, if possible, merged into a common criterion. The aim of the project is to evaluate several single-indicators considering their aptitude to a quality model and merge them into a multiple result criterion (MEK). The MEK should enable a fair comparison of results' quality in cardiological rehabilitation facilities on the basis of an adjusted benchmark.

Material and Methods

The study comprises of 515 persons undergoing rehabilitation, which during the period of February to December 2009 were in inpatient cardiological rehabilitation in one of 10 rehabilitation hospitals that participated in the project (number of cases between 17 and 82; mean? age of individuals 71 years; 404 males). Parameters were selected as result indicators that matched the following conditions: being relevant for rehabilitation, specific target groups, measurable, susceptible to rehabilitation and sensitive to change as well as sufficiently emerging. These requirements were met by 13 single indicators that can be summarized into three dimensions:

1. risk factors: hypertension, LDL-cholesterol, triglycerides
2. physical performance: heart rate at rest, maximum power rating, walking distance (6 min. walk test), heart failure (NYHA states: New York Heart Association), angina pectoris (CCS states: Canadian Cardiovascular Society)
3. subjective health: depression in HADS (Hospital Anxiety and Depression Scale) (PHQ-9 (Patient Health Questionnaire), anxiety in HADS/HAF-17 (Hierarchical Anxiety Questionnaire) as well as physical health, mental health and pain in IRES-24 (Indicator of the rehabilitation state) patient questionnaire.

These 13 single indicators were used to derive a multiple result criterion (MEK). Each result indicator was clinically classified considering its severity. The rehabilitation success was measured considering the severity of the cases in need for intervention evolved comparing the state at the begin and the state at end of rehabilitation respectively. Changes were clinically assessed using four assembly levels: -1 (declined), 0 (no change), 1 (ameliorated) and 2 (highly ameliorated). The sum of changes of each single parameter on patient level was built by the MEK.

In a second step, influence factors on the MEK were analyzed univariately. In order to enable a fair comparison amongst facilities, the MEK was analyzed in a model of multiple linear regression adjusted for relevant influencing factors.

The therapeutic attainments were recorded and analyzed considering the single case by means of the KTL version 2007.

Results

Increasing age, female sex, smoking, in-hospital complications, comorbidities, activity parameters of heart and lung function had with an overall effect of 12% a significantly negative influence on the success of rehabilitation. The average MEK of all subjects measured was 0,84 (SD 0,34; Median 0,84), which corresponds to the level 'ameliorated'. By computing the residuals for MEK in the adjusted regression model, the deviating amount of the predicted success was calculated. The facilities were compared in a fair manner on the basis of the average residuals of the persons undergoing rehabilitation. One facility was significantly better and two facilities were significantly worse.

On the level of therapeutic attainments there are marked differences between the facilities regarding modes of benefits and frequency of treatment-this reflects the different rehabilitation concepts.

Conclusion

The results of the model calculation indicate that data quality of cardiological rehabilitation can be displayed by 13 single indicators; a merge to a multiple-result-criterion as a benchmark is suitable in order to compare rehabilitation facilities in an adjusted manner and to depict quality differences in detail.

Biological and psychosocial variables are adequately evaluated. Objective parameters like blood pressure values, heart rate, laboratory parameters and activity parameters as well as subjective appraisals of the person undergoing rehabilitation are taken into account. An alignment of achieved rehabilitation effects and used resources appears feasible. The potential of amelioration can be depicted to rehabilitation facilities and implemented for the inner quality management.

These results can serve to optimize the allocation regulation by health insurances.

In order to gain evidence on the achieved rehabilitation effects a catamnesis was carried out 6 months after discharge. The results of this will soon be at hand.