
Continuous Case Management of a German Statutory Health Insurance

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To support insured patients, especially those with chronic illnesses or disabilities, the German statutory health insurance Techniker Krankenkasse (TK) offers continuous case management (CCM) under a rehabilitation advisory program serving more than 150,000 insurees each year. Rehabilitation advisors provide individual counseling, generally by telephone. They inform patients about treatment and rehabilitation options, about health care providers, and about other TK services. In a key feature, the model coordinates care across different health care sectors. Through the CCM approach, TK not only assures the best possible care for its insurees, but also safeguards its long-term financial sustainability.

INTRODUCTION

A serious or chronic illness often turns life upside down. To give support to insured patients, TK, one of the major statutory health insurances in Germany, established in 1990 a special service, the TK CCM. TK-insured persons who are affected by a chronic illness or disability can obtain this service by specially trained TK rehabilitation advisors.

This article shows that CCM is a valuable instrument to achieve cost savings, even in health care systems that are highly regulated like the German statutory system with its *Social Code Books 1-12*, and a historically developed segmented, sector-

based health provision system. We show that a CCM is able to stabilize expenditures of a statutory sickness fund, when it is run under defined conditions.

TK at a Glance

The TK was founded in 1884 as the Registered Mutual Fund for Architects, Engineers, and Technicians in Germany and since then is operating throughout the Federal Republic of Germany. Membership figures have reached today more than 3.4 million and another 2 million family members coinsured at no extra cost according to German legislation. Today, still most of the insurees come from technology-related professions. As a not-for-profit statutory health fund the TK is subject to German social law with the special feature of a legally defined self-administration by elected representatives of the insured. The TK is directed by a professional Board of Management. The representation of the insured is guaranteed by the 30 elected members of the administrative council voted for in special nationwide social elections every 6 years. To be able to offer a wide array of services, TK contracts with multiple service providers, including hospitals, physicians, rehabilitation facilities, nursing home facilities, pharmacies, and specialists such as audiologists; all providers must meet special requirements and quality criteria. Over the years, TK has established a consistent base that will be continuously developed. The total budget in 2003 was 16.3 billion dollars.

The authors are with Techniker Krankenkasse. The statements expressed in this article are those of the authors and do not necessarily reflect the views or policies of Techniker Krankenkasse or the Centers for Medicare & Medicaid Services (CMS).

Table 1

Germany's Techniker Krankenkasse (TK) Continuous Case Management Model Goals: 2004

- Bridging the gap between various health care sectors.
- Allocation of financial means—reduction of direct/indirect costs by organizing appropriate health care delivery.
- Identifying the most appropriate setting for each individual case.
- Increasing the chances for recovery or alleviation.
- Increasing the patient's autonomy.
- Increasing patient's ability to cope with the disease.
- Improving patient's quality of life.
- Strengthening the market position and competitiveness of TK versus other statutory and private health insurance.

SOURCE: Techniker Krankenkasse, 2004.

Historical Development

In July 1990, TK founded a special service called rehabilitation advisory with 30 advisors. Since then the TK rehabilitation advisory service had undergone several adjustments concerning contents and structures, becoming a model of CCM.

At the start of the model, all cases of chronic diseases were handled by the rehabilitation advisors; the organizational structure was decentralized. The model was mainly hospital-sector-based. During the last 14 years, the German health care system has undergone many changes; i.e., the billing of inpatient benefits changed from daily rates to case based lump sums. In consequences, TK rearranged its CCM by redesigning the organizational structure and standard proceeding operations (Aichberger, 2004).

The current TK CCM was set up in 2003. It serves more than 150,000 insurees each year based on a hospital stay. Today, there are more than 270 TK case managers acting throughout Germany. The service focuses especially on transsectoral diagnosis¹ which are in need of a special assistance and combines proximity to insurees with a centrally leaded management.

¹The German health care system is separated into care sectors, i.e.: hospital care; outpatient and ambulatory care; rehabilitation; and medical drugs. Transsectoral diagnoses are not only treated in one single, but in different sectors.

Goals and Main Issues

The goals of the TK CCM model have remained the same, providing supplementary assistance to insurees who are affected by a serious illness or disability in order to increase their chances of recovery or alleviating and to assist them in finding ways to handle everyday life as well as improving their quality of life (behavior modifying). Another goal would be to streamline insurees health care pathways with simultaneous optimizations in quality of care in order to allocate financial resources means in the most efficient ways. Like this, TK assures its long-term financial solidity and sustainability. Table 1 outlines additional goals that the TK CMM model expects to achieve.

In the German health care system, the inpatient hospital treatment stays is often followed by rehabilitation measures—differing slightly in between diagnosis. At the same time, health care sectors are strictly separated. When rehabilitation measures are necessary for complete post-hospital recovery, one of the rehabilitation advisors will assist the insuree and their physicians. They act as the patient's guides and advocates following defined counseling pathways. These pathways are defined by the insurance in cooperation with physician and hospitals, as well as with their associations.

The TK CCM pursues several parallel goals, all with focus on achievement of quality and efficient allocation of resources:

- Optimization of the individualized health care process.
- Optimization of treatment outcomes and prevention of unnecessary rehospitalization.
- Increased efficiency of health care-related services and delivery, ensuring that patients receive the most appropriate individual care.
- The efficiency of the health outcome and quality assurance is the most important target.
- Development of the patient's autonomy and sensitization of the patient to the importance of good compliance.
- Strengthening the patient's compliance, means that the participant is asked to tell the advisor about their own ideas, preferences, and needs (thus building an idea of his own rehabilitation).
- Initiation of coping strategies of the patient.
- Initiation of behavioral changes.

In order to assist these individuals properly TK rehabilitation advisors receive on- as well as off-the-job professional training. They must have broad knowledge in the German social welfare law, i.e. the *Social Code Book*, the legal possibilities offered by various institutions, medical knowledge (including the effects of functional limitations, treatment, and care options), and social and communicative skills. Additionally, they know about the regional conditions in health care—special practitioners, establishments, or self-help groups. If desired, the patient will receive assistance throughout the period of illness as well as afterwards. The program is based on contact via telephone.

Presently, the CCM service is initiated by an inpatient hospital treatment stay. The patient's personal identification, hospital

name, diagnosis, etc. are electronically transferred from the hospital to TK within 3 days after admission. Once the TK receives this information, the CCM starts by contacting the patient and the responsible physician in the hospital, by telephone. Once contacted, the diagnoses are approved² and the appropriate procedures and activities for the individual's treatment are discussed. Throughout this process, advisors take a holistic view of the patient and his environment.

Initially, the advisor will offer assistance to the physician. He provides information about legal options and the possibilities for outpatient and inpatient treatments. The special knowledge of the rehabilitation advisor should supplement the physician's medical knowledge. If the physician believes that special measures are justified, the advisor will invite the insuree to an interview; explaining what kind of individual measures the physician plans to achieve by his treatment. If necessary, the advisor will also visit the insuree at home or in the hospital.

The advisor provides information about suitable practitioners or establishments, certified high quality health care providers, and about TK benefits such as sickness benefit, travel expenses, or domestic help. The advisor helps to arrange the chosen measures and coordinates them between the insuree, hospital, rehabilitation establishments, practitioners, specialized physicians, and kinesi-therapists. In appropriate time before the end of each measure, the advisor will investigate if other maintenance is needed. If so, the advisor will organize extended measures and care, provide information about self-help groups, advice centers and disability organizations and will help the insuree to make contact with them. Additionally, they inform patients about all other TK services that

² Both the main diagnosis and comorbidities are important to identify appropriate measures for each individual case.

may be available to them. In this way, CCM is a high quality discharge management linking different health care sectors for the sake of the patients and the efficient provision of care.

Details of CC

In complex cases, insurees need help to navigate the health care system. Eligible for this service are all members of target populations who are insured with TK, especially those affected by serious illnesses or disabilities. Individuals are eligible to take part in the program if they fulfill the following criteria: (1) they must be TK-insured, (2) their illness must correspond with the TK-defined and selected diagnoses, and (3) they must have undergone inpatient treatment or be unfit for work. Typically, these cases correspond to a selected diagnosis, e.g., apoplexy, asthma, cardiovascular diseases, cancer, rheumatism, spinal disorders, and mental diseases.

The service is free of charge for participants and financed by insurees' contributions to TK according to regulations of the *Social Code Book*. An electronic data processing system provides comprehensive information about the insuree's medical history, health care status, and individual factors to support the rehabilitation advisors as they plan their approach. Thus, the rehabilitation advisor can coordinate among the various persons involved in the health care process. Additionally, the rehabilitation advisor is able to followup on the treatment course, possibly preventing premature discharges as well as quality deficits during treatment. The insuree is encouraged to ask the physician about their health care treatments. The transfer during the treatment process, from hospital to ambulatory care, post-acute treat-

ment or other measures, is coordinated by the rehabilitation advisor, who tends to the timely supply of all services and measures. Therefore, comprehensive monitoring and feedback measures allow for early detection of problems in care or any deterioration in health status. Unnecessary rehospitalization can be avoided throughout the chain of care. Steps can be taken to forestall deterioration.

- *Reminder System*—The advisor reminds the patient by telephone or in writing to go for regular examinations, such as podiatry or eye. It is possible for risks in health to be detected at an early stage.
- *Feedback System*—At regular intervals, the insurees are asked to do a self-assessment as well as evaluate treatment quality and specific CCM measures.
- *Provision of Supplementary Information*—Depending on the diagnosis, most insurees need individual supplementary information (flyer, brochures, face-to-face counseling).
- *Patient Education*—Linked to certain diseases, TK offers patient education tutorials on frequent chronic conditions such as diabetes or asthma.
- *Coordinated Use of Telemedicine and Telemetric Applications*—TK runs a special program for insurees with chronic heart failure (CHF). This program offers a wide range of information for the patient concerning his behavior in defined settings as “CHF and sport,” and “CHF and alimentation.” Supplementary, participants of this program transfer weight and blood pressure data to a monitor center; in case of conspicuous parameters, specially trained nurses or physicians get immediately in contact with the participant or his physician.

To achieve the program goals, special tools were developed for rehabilitation advisors in their role as patient pilots:

Table 2
Germany's Techniker Krankenkasse (TK) Services for Insurees: 2004

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- Individual outbound calls and counseling (coordination of health care after discharge, home care, medical devices, and ambulatory care).
 - Behavioral management program.
 - Reminder system.
 - Feedback system.
 - Effective control of patient pathways through the health care system.
 - Effective provision of information about certified high quality health care.
 - Provision of supplementary information according to diagnosis.
 - Transfer to integrated care and other models.
 - Information of other TK services.¹
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¹ Other TK Services are: patient information on diseases, contents of TK Web portal, patient information on drugs, and prevention seminars.
 SOURCE: Techniker Krankenkasse, 2004.

- *Pharmaceutical Benefit Management—A Personal Drug Utilization Report (PDUR)* informs the patient about their drug use behaviors (Lentges et al., 2004). This PDUR lists all drugs received in public pharmacies by prescription of physicians. It is expected to be discussed either with the patients' physician or pharmacist. It aims to (1) improve patients' information about their individual drug prescriptions, (2) influence their drug use behavior, (3) improve patients' active participation in the medical decision process, and (4) maintain patients compliance.
- *Care Management Guidelines*—These include structured assessments and documentation to ensure that all important aspects of care are addressed.
- *Self Assessment*—At regular intervals, insurees are asked to carry out a self-assessment as well as to evaluate the quality of treatment and measures taken under the CCM program.
- *Participation in Decisionmaking*—The patient is involved in all decisions related to his rehabilitation process to ensure the ideal care for each individual person. The rehabilitation advisor works as a partner, advisor and coordinator for all insurees as well as for the physician. TK is providing special services to sustain shared decisionmaking processes (Table 2).

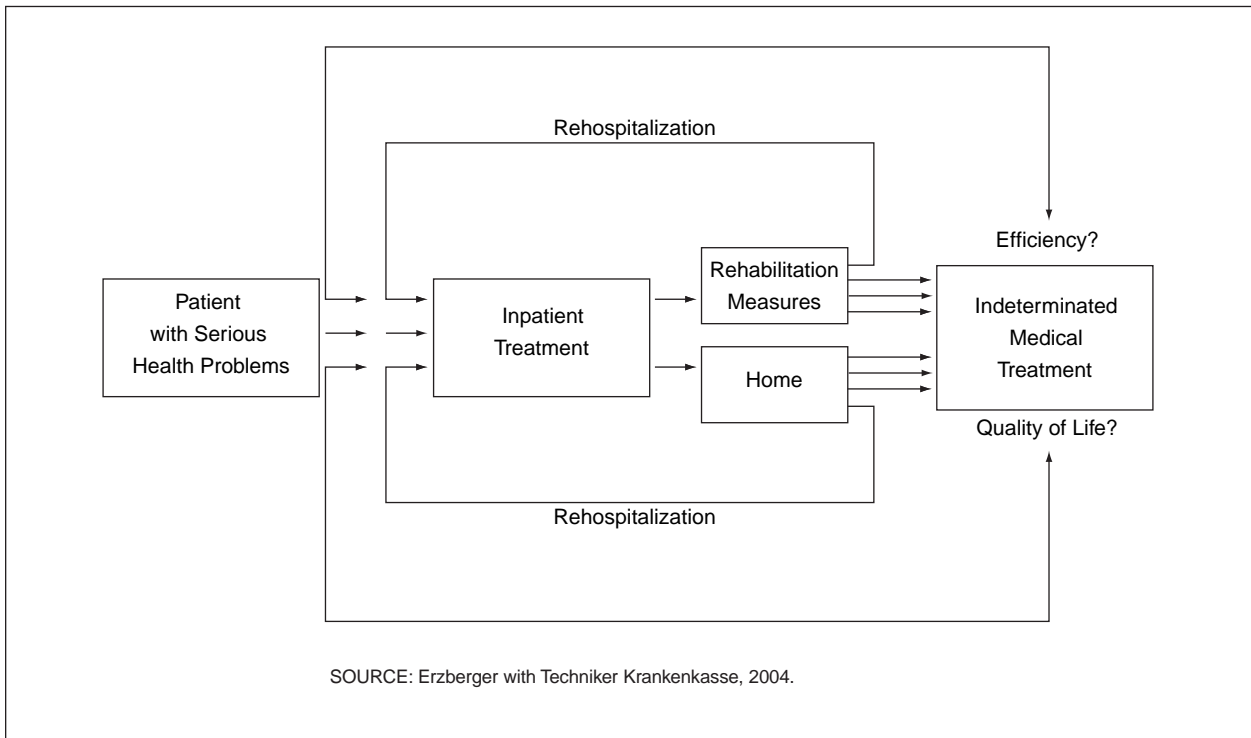
A Case

A 44-year-old TK patient living in a small village near Frankfurt collapses while playing with his children in the garden. His wife immediately calls the local rescue service. Within 30 minutes, the patient is taken to the special stroke unit of a sizable Frankfurt hospital. The diagnosis confirms what the rescue service suspected: The patient has suffered a stroke, with typical symptoms including paralysis of the right side of his body and disorders in sensation.

Within a few days after admission, the TK is notified that the patient has been hospitalized. The electronic data transmission also provides information about the diagnosis. In this situation, the rehabilitation advisor gets in touch with the patient, his wife, and the physicians at the hospital doctors to obtain the facts needed to coordinate all necessary health care services. Offering his assistance to the patient and his wife, the rehabilitation advisor gathers information about his life setting and medical history. In this case, the patient has been under stress for some time, gets little exercise, and is quite overweight. A few weeks ago, he experienced different symptoms that suggested a transient ischemic attack. Awareness of these facts gives the rehabilitation advisor a holistic view of the patient that is very helpful as he organizes the patient's rehabilitation. Working with

Figure 1

Germany's Techniker Krankenkasse (TK) Patient Pathways Without Continuous Case Management, by TK Rehabilitation Advisors: 2004



the hospital specialists and the patient's family, he coordinates measures that will help the patient manage his life after discharge. Telling the patient and his wife that changes in attitude and behavior are needed to avoid the recurrence of symptoms, he informs them of possible ways to cope with the patient's illness. He provides additional information about the disease and remains available as a resource throughout the recuperation period.

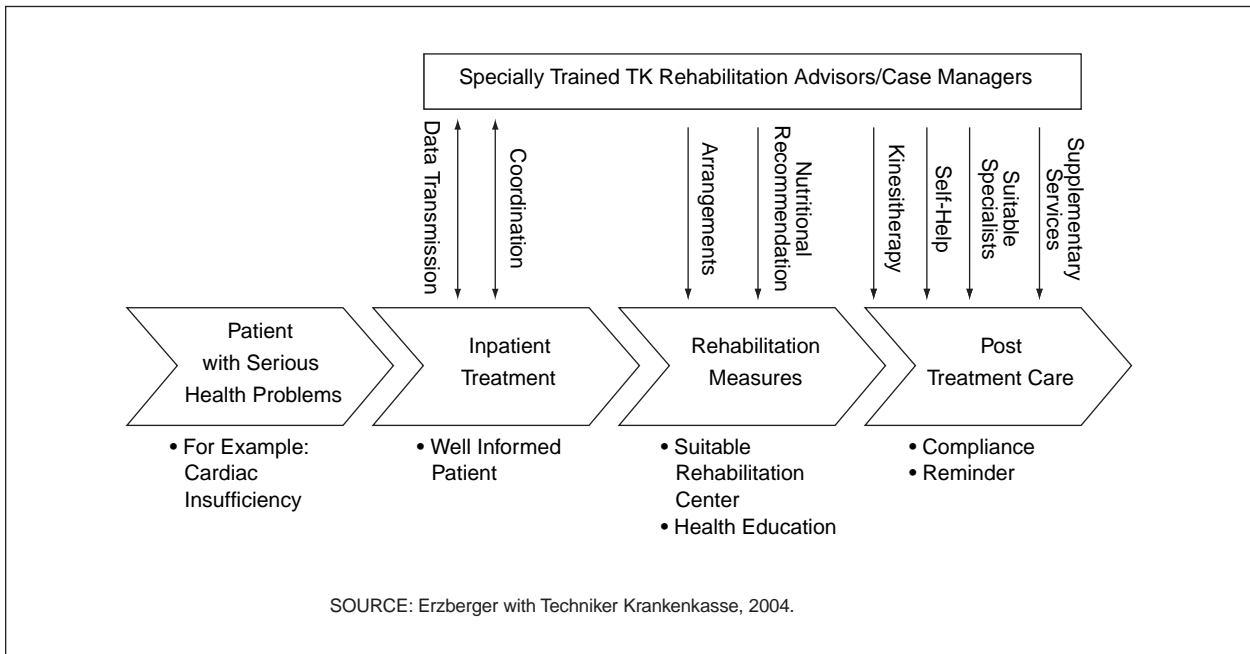
Because the hospital has a specialized stroke unit, the patient can begin analysis therapy with oral medication. As a result, he is moved out of the acute stroke unit after a few days. The rehabilitation advisor supports the transfer to another ward. He also starts looking for a rehabilitation center that meets this patient's needs, and he helps him obtain therapeutic devices such as a wheelchair. With this assistance, the patient is discharged to a clinic with a special rehabilitation stroke unit.

The rehabilitation advisor's close and consistent case management fosters mutual trust that not only supports the patient's healing, but also helps his wife deal with the situation. The rehabilitation advisor pays attention to the patient's personal situation and needs throughout the process. He helps the patient and immediate family navigate through the health care system. For example, he recommends a local self-help group for the patient's wife. With this support, the patient and his wife can focus their strength and energy on his rehabilitation therapy.

During the patient's stay in the rehabilitation center, it becomes apparent that he will be unable to return to his job; therefore, he will need retraining or vocational rehabilitation. The rehabilitation advisor contacts other pension insurance programs, such as the Federal employment office.

Figure 2

Germany's Techniker Krankenkasse (TK) Patient Pathways With Continuous Case Management, by TK Rehabilitation Advisors: 2004



The rehabilitation advisor continues to work with the patient after he leaves the rehabilitation center. He assists in organizing the patient's ambulatory care and home nursing care. In addition, he helps with organizational matters; he forwards a request form for rehabilitation or medical devices, provides lists of appropriate specialists, and reminds the patient of his regular medical examinations. He helps the patient arrange for physical and/or occupational therapy. In short, the rehabilitation advisor does everything he can to optimize the links among various health care-sectors. After the patient's discharge, for example, TK will provide on request a PDUR listing all the drugs prescribed in recent months by the patient's different physicians. This enables the patient to contact his physician to adjust the individual medication and other regimes to his present situation and needs. Figures 1 and 2 show the patients' pathways with and without continuous case management by TK rehabilitation advisors.

Quality Assurance and its Efficiency

As in other health services, quality assurance affects nearly all aspects of CCM. Quality assurance occurs as part of the process—for instance, all aspects of the case are reviewed before the case is closed—as well as afterwards. Advisors working on a particular case meet in case conferences and quality circles convened to facilitate the exchange about similar cases. Quality assurance also results from the preparation, distribution, and analysis of management reports. In quality assurance, the insuree plays a decisive role as the person in the best position to comment on the advisory services as well as on individual treatments and their outcome.

With a validated questionnaire, insurees are asked to rate all aspects of service and to give feedback on the advice and assistance they received from the TK rehabilitation advisory team. Quarterly the TK conducts a survey, where over 1,200 insurees throughout Germany, who had contacts to

Table 3
Germany's Techniker Krankenkasse (TK) Continuous Case Management Model Outcome Measures Survey: 2005

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- Increased chances of recovery or of alleviating.
 - Improved quality of life (results of a quality related survey).
 - Nearly 50 percent of the respondents indicated that with the help of the TK rehabilitation advisors, they found a healthier way of living.
 - More than 80 percent declared to cope better with their day-to-day responsibilities after getting assistance.
 - A lasting effect on attitude changes (behavioral management program).
 - Reduction of direct and indirect costs.
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SOURCE: Techniker Krankenkasse, 2005.

a TK rehabilitation advisor during CCM process, are addressed. The survey is conducted in a written form. The questionnaire contains five topics: (1) insuree's satisfaction concerning TK, (2) insuree's satisfaction concerning the CCM, (3) the contacts between the rehabilitation advisor and the insuree, (4) insuree's state of health, and (5) personal details of the insuree (i.e. age, sex, residence).

The response rate of the survey (first quarter, 2005) was 50 percent higher than expected. Of the respondents, over 60 percent were in the workforce. More than one-half of the respondents (approximately 55 percent) were male. Over 50 percent surveyed were age 44-57. Table 3 lists the outcome measures of the latest survey.

Almost one-half of the interviewees stated that with the assistance of the TK rehabilitation advisory service, they were able to achieve and maintain a healthier lifestyle. According to the results of the quarterly survey, over 80 percent of the insurees said they had improved their ability to deal with daily tasks. Also, many insurees cope with the new situation of life much better when attended by the rehabilitation advisory service. The insurees especially appreciate the friendliness, speed, and dependability of the rehabilitation advisory services. The results depend on the state of health of the insuree as well as on the diagnosed illness. The results of the survey are used to continuously identify areas for improvement to optimize the service (Figure 3).

In terms of total quality management, a continuous monitoring of processes and structures completes the treatment-centered quality assurance from the patient's perspective. Monthly management reports are prepared for TK board members and executives.

The continuous economic evaluation of the health outcome is measured by comparing insurees without rehabilitation advice to those receiving rehabilitation advisory services. The setting of this evaluation compares an interventional group with a control group. Both had been adjusted for age, sex, diagnosis, and hospital stay. The evaluation revealed an achievement of cost savings by a range of different ways.

With a health care sector-related view, we can report the following yearly savings for the TK:

- CCM is reducing yearly expenses in hospital treatments by 3 percent of all expenses related to hospital treatment. Defined services like telemedical programs contribute an important portion to this reduction.
- A supplementary amount of 1.83 million dollars is saved through the pharmaceutical case management.
- Additionally, the expenditures for sick payments can be equally reduced by 3 percent.

These economic results are based on different mechanisms:

- Expenditures on hospital treatments are saved primarily through the narrow

Figure 3

Germany's Techniker Krankenkasse (TK) Patient Pathways Without Continuous Case Management (CCM), by TK Rehabilitation Advisors: 2004

Question: How do you rate your overall satisfaction with the assistance in the CCM?

Categories¹: completely satisfied / very satisfied / satisfied / less satisfied / not satisfied

Table Shows Categories: completely satisfied + very satisfied + satisfied

Reintegration in Work	73.1%
Filling Out and Forwarding Application Forms	82.9%
Contact Other Institutions Involved ²	70.3%
Searching Self-Help Groups or Information Centers	64.1%
Making Sure Care is Organized	75.3%
Offering Different Treatment Options	75.4%

¹ Different treatment options: search for adequate rehabilitation clinic; other institutions; pension insurance institution; and unemployment insurance.

² Breakdown of satisfaction scores (completely satisfied / very satisfied / satisfied / less satisfied / not satisfied in percent. (15.4 / 26.3 / 33.7 / 9.7 / 14.9); making sure care is organized (13.4 / 27.4 / 34.4 / 10.2 / 14.5); searching self-help groups (12.2 / 16.0 / 25.9 / 16.8 / 19.1); contact other institutions (13.5 / 24.9 / 31.9 / 14.1 / 15.7) filling out and forwarding applications forms (20.2 / 31.1 / 31.6 / 7.9 / 9.2); filling out and forwarding applications forms (20.2 / 31.1 / 31.6 / 7.9 / 9.2) and reintegration in work (14.4 / 27.4 / 31.3 / 10.9 / 15.9).

SOURCE: Hecke with Techniker Krankenkasse, 2005.

assistance of the rehabilitation advisor. By a proactive discharge planning, total duration of the hospital stay is reduced. Furthermore, unnecessary rehospitalizations can be avoided.

- TK-insured patients are contacted to provide information about drugs they received by public pharmacies. Patients learn how they can reduce the costs for their health insurance and with regard to their own contributions by using alternative ways of distribution as there are delivery services by foreign countries' public pharmacies. In addition, patients receive information about the substances of the prescribed drugs, their side effects, and special advice on how to administer them. A dialogue between the patient and his pharmacist and/or his physician is initiated by the PDUR, accompanied by a free counseling voucher. The economic benefits are achieved by reducing hospital stays based on drug interactions and side effects, and on a

strengthened patient's compliance for the need of a regular drug intake. Additionally, distribution of drugs by selected pharmacies contracted by TK allows for reduce expenditures for prescriptions.

- Expenditures for sick payments can be reduced by close coordination of all concerned health care providers accelerating the process of rehabilitation. The insuree is able to return back to work earlier which directly results in cost savings for the sickness funds and the employer.

Further Developments

TK CCM has been proven to be effective, to be efficient, and to be appropriate to the participants' needs, and developed from a one-dimensional counseling offer to a complex CCM model. Inpatient hospital treatment will not be any longer the only way to select patients to contact. The aim is to

Table 4
Germany's Techniker Krankenkasse (TK) Continuous Case Management Model Future Developments: 2005

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- Implementation of ambulatory care sector.
 - Implementation of medical devices management.
 - Implementation of a complex pharmaceutical benefit management.
 - Contracting health care deliveries by the principle of bonus-/malus-remuneration-mechanisms¹.
 - Link to other high quality services of TK:
 - Telemedicine and telemetric applications
 - Shared decisionmaking tools
 - Personal drug utilization report
 - German integrated care models
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¹ The expressions bonus/malus concerns the linkage between success of defined measures in a health care supply chain and an incentive. If a provider (i.e., a physician) achieves successfully a goal that was described before together with the patient and/or the TK, he will get a supplementary remuneration.

SOURCE: Techniker Krankenkasse, 2005.

implement outpatient and ambulatory care into CCM in order to avoid rehospitalizations. This approach is expected to be achieved by the end of 2005.

Another supplementary approach will cover all services and expenses linked to medical devices based on direct contracts with selected providers who will define prices for medical devices. This development of the model is planned for the beginning of 2006.

Due to the actual situation in the German health care system that encourages integrated care models, the TK CCM will link also to these approaches. Furthermore, TK is contracting the main health care providers to be able to develop special services for the insurees. Contracts concerning provision of special care are characterized by bonus-/malus-remuneration mechanisms³ as economic incentives.

³ The expressions bonus/malus concerns the linkage between success of defined measures in a health care supply chain and an incentive. If a provider (i.e., a physician) achieves successfully a goal that was described before together with the patient and/or the TK, he will get a supplementary remuneration.

TK's further developments of the CCM model are listed in Table 4.

With all its patient-centered individualized services, TK has inserted another piece in the mosaic of a efficient and high-grade quality patient-centered health care system in Germany.

REFERENCES

Aichberger, F.: Sozialgestzbuch, Munich: 2004 (ISBN 3-406-46009-7) and Aichberger, F.: Gesetzliche Munich: Krank-enversicherung, Soziale Pflegeversicherung; 2004 (ISBN 3-406-43542-4).

Lentges, N., Verheyen, F., Hecke, T.L., et al.: International Society for Pharmacoeconomics and Outcomes Research: PMC14, Personal Drug Utilization Report (PDUR): A Contribution To Cost Reduction and Patient Empowerment. Number ISPOR2004, PMC 14. Techniker Krankenkasse, Hamburg, Germany, 2004. Internet address: <http://www.ispor.org/congresses/germany1004/posters2.asp> (Accessed 2005.)

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