の課題の解決に取り組む運営主体を確立する必要がある．その場合に，UDSMRのように医学会以外のリハ関連組織と共同運用するという選択肢も検討されるべきであろう．

第二に，症例登録データベースの開発・運用の目的，および収集する項目や入力形式についての合意づくりである．データベースにもいろいろな目的があり，それによって集めるべき項目や，そこに入力されるべき情報の細かさも異なってくる．たとえば，エビデンスづくりのためであれば，多数の情報が必要となるし，診療報酬改定に向けてであれば，改定論議の焦点になりそうな項目は外せないことになる．共同運用を目指す場合には，関係者の間の合意づくりも重要となる．

第三に，データ入力のインセンティブ(動機づけ)の問題である．エビデンスづくりのために，全く無報酬のボランティアでデータ入力するものもあれば，専門医認定の要件としている学会，外部研究資金を得てデータ入力謝金を提供しているところもある．UDSMR等では逆に，参加病院が費用を負担している．それは診療報酬や医療の質の評価・認証等にデータ提出が必要とされる等，米国における制度の特徴を反映している．データの二次利用を認めるのであれば，その提供対象や範囲等についてのルールづくりも必要となる．

第四に，入力されるデータの質の向上である．この間の経験で，病院間でデータの質にもバラツキが大きいことがわかってきた．たとえば「合併症の有無」という項目で病院間比較をすると，「あり」の割合が大きく異なっており，どの程度の重症度の合併症まで「あり」とするかの基準が病院間で異なっていることが伺われた．多施設協同運用型で，特にベンチマーク等を行う場合には，データの評価基準や入力時のミスも含め，データの質が施設間でほぼ保たれていることが必要である．これがUDSMRがFIMの評価法についての研修会を行い，教材までを提供している理由であろう．

おわりに

多施設参加型データベースの開発・運営には，今回あげた以外にも，必要な資金の確保，データを活用したエビデンスづくり等多くの課題がある．しかし，この間の国内外における急速な広がりとその背景，理由等を考えると，一時的なブームとは考えにくい．UDSMRの経験等をみても，試行錯誤を経ながら長い年月をかけてであろうが，少しずつ改善を重ね，徐々に開発・普及が進んでいくと思われる．

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An evaluation of the quality of post-stroke rehabilitation in Japan

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ABSTRACT

Context and objectives: this study was to assess the differences in rehabilitation outcomes between the different facilities in Japan, and to determine if there was any variation in patients' functional recovery at hospital discharge across the different facilities.
Methods: This study focused on patients in recovery in the rehabilitation ward using the data of 680 patients from 12 hospitals after adjusting for triage at admission obtained from *the Rehabilitation Patient databank in Japan* (issued in September, 2009) and compared the therapeutic results of each hospital. We estimate the expected value of levels of ADL at discharge for rehabilitation patients using regression analysis. Furthermore, we show the distribution of the expected improvement levels in ADL by hospitals.
Findings: At the time of admission, there were no differences among hospitals in their patients' characters. However, outcomes differed widely among the hospitals. The differences in the participation of physician registered as a rehabilitation specialists, conference execution rate, amount of exercise per day, self-exercise without a therapist, and exercise in wards, were statistically significant differences between hospitals.
Conclusion: Due to the assessments for health care quality and the publication of results are expected that health care providers will put a voluntary effort to improve their future health care services. Further studies should analyze the characteristics of high-performing hospitals.

Keywords: rehabilitation, quality of care, post-stroke.

INTRODUCTION

There have been growing concerns and requirements for health care quality in Japan these days. The introduction and implementation of P4P (Pay for performance) programs for rehabilitation and recovery in 2008 was a significant advancement in the area of health care service. However, there still remains a gap involving a need for close examination of what factors may critically influence the rehabilitation medical service quality and the degree to which hospitals have made or will make efforts in achieving best practice in rehabilitation. To begin with, the assessment criteria for P4P set forth by the Japanese government are summarized as follows.

In Japan, P4P inpatient rehabilitation among stroke survivors began in 2008 with a primary objective to provide the services needed and improve post stroke patient functional recovery. Despite concerns over the effectiveness and quality of P4P by some stakeholders of the program in Japan,[1] three standards were developed for the P4P inpatient rehabilitation program. They included: (1) >60% of participating stroke survivors should be discharged to the community; (2) >15% of newly hospitalized patients should have severe stroke; and (3) >30% of patients under the P4P program should demonstrate an improvement in their daily living functions or functional recovery at the time of hospital discharge.

P4P is considered to be a tool that can enhance health care quality and improvement. Reports show that P4P has been increasingly used in developed countries such the United States[1] and the United Kingdom.[2] Nevertheless there is a lack of reports on formal evaluation of hospital P4P in the literature. Systematic evaluation of hospital P4P is needed to understand the effect and benefits of investing in P4P.[3]

Reacting to these developments, our research team, under the government sponsorship, embarked on the development of benchmarking database for rehabilitation medicine in 2007, and built up successfully a large clinical dataset of approximately 4,000 patients from hospitals across the nation.

To facilitate the evaluation, *the Rehabilitation Patient Databank* was developed with financial support from the Ministry of Health, Labor and Welfare of Japan. As of May 2009, 30 hospitals had contributed structured data from 3,949 patients to the databank. It should be noted that not all the hospitals have a rehabilitation unit.

This database, brought about by the intensive efforts of volunteer doctors who consented to the need for the presence of a central database for medical advancements in rehabilitation, has been attested for its usefulness and validity through doctor reviews conducted on an once every three month basis. As a result, the upgraded Rihab DB version 3.3 came into being in 2009, and this will surely be followed by further developed versions under the support of the Japan Rehabilitation Medical Association from 2010. Using the

information from *the Rehabilitation Patient databank*, this study was to assess the differences in rehabilitation outcomes between the different facilities in Japan, and to determine if there was any variation in patients' functional recovery at hospital discharge across the different facilities.

This study is hopefully expected to provide fundamental ideas for the government policy makers as well as medical profession to meet the growing needs for enhanced medical service quality.

METHODS

This study consists of two parts. In part 1, we estimate the expected value of levels of ADL (Activities of Daily Living) at discharge for rehabilitation patients using regression analysis. In part 2, we show the distribution of the expected improvement levels in ADL by hospital from the estimation results in part 1.

Material and population

In this retrospective study, patient level data were obtained from the Rehabilitation Patients Databank in Japan.

Hospitals contracted with the databank collected patient data twice per year, the first between January and February and the second between July and August, from April 2005 to March 2009. The patients who discharge from the hospital during the survey period are registered with the databank (consecutive data).

To ensure our outcomes of interest were comparable across the different facilities, we used the following inclusion and exclusion criteria to select our study cohort:

(1) Drawing from the literature that acute patients and chronic patients, both of whom are included in the Rehabilitation Patients Databank, have different attributes, this study covered only one type of patients: chronic patients (21 hospitals, n= 1,519).

(2) The effectiveness of chronic rehabilitation is affected by compound factors including the patient's environment and treatment by medical practitioners, and thus this study attempted to use patient data with as similar conditions as possible in comparing different hospitals. To minimize the difference due to age in improvement rate in ADL, the study was conducted among patients aged 55 to 84 (n=1,212).

(3) By drawing on the literature that early onset was important for more effective rehabilitation for stroke patients, the interval between the stroke and the admission was

confined to between over one week and below 8 weeks (n=1,201). The specific reason for choosing that interval was that patients treated within a week of the stroke were highly likely to be acute patients, who are more easily subject to compound factors that affect rehabilitation effects, and patients admitted after over two months were likely to have lost the opportunity of timely treatment, which could prevent accurate assessment of treatment effects albeit they were properly treated.

(4) Similarly, the length of inpatient stay for this study were also confined to between over one week and below 8 weeks (n=969) because patients who were discharged within a week were assumed to stop being treated and for patients who stayed in hospital over two months, there was a possibility that their length of stay increased for other reasons such as a complication.

(5) Lastly, this study conducted a comparative analysis of patient-level treatment achievement in rehabilitation among hospitals. For fair comparison, hospitals whose submitted samples were too small were excluded and the cut-off was set as 15 cases available (12 hospitals, n=680).

Variables of interest

The Functional Independence Measure (FIM™) is the most widely used functional assessment measure in the rehabilitation community[4,5] and it is regarded as most useful in assessing the patient progress during inpatient rehabilitation. The FIM is an 18-item, seven level ordinal scale. It is the product of an effort to resolve the long standing problem of lack of uniform measurement and data on disability and rehabilitation outcomes.[6] The 18-item ordinal scale can be calculated into a summary score and two subscale scores of motor and cognitive function; the higher the score, the more independent a patient's function.[7] In this study, total FIM score was used to assess the patients' functional recovery or as a proxy for patients' daily living functions. Patient motor scale and cognitive scale were collected and analyzed at inpatient admission and discharge dates, respectively.

Prediction of FIM™ score at the time of discharge

There are two methods for calculating the improvement rate in FIM. The first is a method where the rate is calculated by taking the difference between the admission and discharge score and dividing that by the length of stay. This only provides a general sketch of how much improvement took place for any patients without considerations of individual patient characteristics. The second method involves taking the difference the estimated scores

based on individual patient characteristics obtained at admission and the actual scores shown at discharge. This enables difference in treatment outcomes among hospitals to be compared on the same case mix basis, that is, between patients with the same conditions at the start, and this method was adopted for this study. The following is the applied calculation method for FIM scores at discharge.

Motor FIM™ scores and cognitive FIM™ scores at admission were respectively computed, controlling for variables affecting the outcomes regardless of rehabilitation care quality experienced by stroke patients, such as age, number of days from the stroke until admission, and modified Rankin Scale score before the stroke. Estimated scores were obtained from regression analysis with FIM™ score at discharge as a dependent variable and motor FIM™ score, cognitive FIM™ score at admission, age, number of days from the stroke until admission, and modified Rankin Scale[8,9,10] score before stroke as independent variables (Table 1).

It was found that those variables used in the estimating equation had an accountability of about 60% with R^2 being 0.649. This suggested that the rest 35% was accounted for by certain processes and practices involved in rehabilitation care service, which was the concerned area of this study in comparing differences in performance of different hospitals.

Therapeutic achievements

The therapeutic achievement in this study was defined as the difference between the predicted-discharge FIM™ score and the actual FIM™ score measured. We analyzed this difference with a 95% confidence interval.

Statistical analysis

Evaluation of therapeutic achievement for each patient using estimated values from regression analysis

To evaluate the therapeutic achievement for each patient, the calculation of FIM gain was made by taking the difference between the actual FIM score and the estimated FIM score obtained from the equation in Table 1. The whole distribution of scores was divided into thirds to classify subject patients into three groups.

The range of therapeutic achievement for each patient was divided into three groups: good (a group whose prediction value was higher than its measurement value: over 6); fair (a group whose prediction value was supposed to be equal to its measurement value: from –4 up to 5); and poor (a group whose measurement value is below its prediction value: over 5).

Each group's distribution was examined.

Comparison between hospitals using cluster analysis

After confirming if there is any difference in the shape of distribution for FIM Gain Group 3(good, fair, poor) between hospitals, high performing hospitals and low performing hospitals were respectively identified and accordingly assigned to each cluster in order to test what factors influence the difference. The group rated as "poor" in terms of FIM gain was used as a criterion for cluster analysis.

By carrying out cluster analysis with the characters of patient distribution in each hospital, this research classified hospitals according to performance into a high performance group or low performance group.

RESULTS

Distribution of therapeutic achievements in each hospital

While focusing on the databank (issued in September, 2009) data in patients in recovery in the rehabilitation ward, this study adjusted for triage at admission and compared the therapeutic results of each hospital by using the data of 680 patients from 12 hospitals as described above.

By considering each patient's conditions at admission, their FIM™ score would be likely to judge the improvement of activities of daily living (ADL) predicted at the time of discharge then compared against the measurement value at discharge. As a result, the FIM™ score showed a distribution range of 24.4 at a 95% CI of –21.2 with –0.28 on average (standard deviation [SD]: 12.88). On the basis of the results, the patients were divided into three different groups: "good"; "fair"; and "poor". Each hospital's distribution was examined. As a result, it was found that there were statistically significant differences in the ratio of distribution of "poor" among the hospitals (Table 2). Notably, while the group for the poor levels of the FIM™ score accounted for only 7.7% of patients in Hospital A, the ratio of the group for the poor levels in Hospital L was up to 60.5% of patients.

Analysis of factors affecting the difference in therapeutic achievements at each hospital

Although the FIM™ score was predicted at the time of discharge in the same conditions by adjusting the triage at admission, each hospital showed a variety of differences in distribution from the measurement value. Therefore, by using cluster analysis to analyze factors leading to the different distribution of therapeutic achievements in each hospital, the

study divided all the hospitals into two different groups according to therapeutic achievement while retaining the actual condition of health care services provided by each hospital group (Figure 1).

Group one was a hospital group with superior quality of health care (high performance group) and the other group was a hospital group with lower quality of health care (low performance group). The differences in the FIM™ improvement score, FIM™ improvement rate per day, the ratio of discharged patients to home, length of stay, participation of physician registered as a rehabilitation specialists to JARM (Japanese Association of Rehabilitation Medicine), conference execution rate, amount of exercise (physical therapist [PT], occupational therapist [OT], and speech therapist [ST], in total) per day, self-exercise without a therapist, and exercise in wards were all analyzed. In all the items, except the ratio of discharged patients to home, there were statistically significant differences between those two groups (Table 3).

Improvement in FIM™ score

In the FIM™ score, widely used as criteria for ADL, the high performance hospital group improved by 30.3% on average at the time of discharge than at admission, while the low performance hospital group improved by 19.0% on average. In the FIM™ improvement rate per day, the high performance hospitals group improved by 0.36%, while the low performance hospitals group improved by 0.17%.

Ratio of discharged patients

The high performance hospital group was 80.5% while the low performance hospital group was 76.6%, which shows there was no statistically significant difference between those two groups.

Average length of stay

The average length of stay for the high performance hospital group was 113.5 days, which was surprisingly longer compared with 86.4 days in the low performance hospital group.

Participation of physician registered as a rehabilitation specialists to JARM

Sixty percent of rehabilitation specialists in the high performance hospital group participated compared with 31.9% in the low performance hospital group. The conference execution rate (more than once a week and by more than three types of specialists) showed 69.2% in the high performance hospital group carried out such an execution, while 29.9% in the low performance hospital group carried out such an execution.

Total daily exercise

Measuring the total amount of exercise with the PT, OP, and ST per day showed that the high performance hospital group spent 82.9 minutes on average per day while the low

performance hospital group spent 70.6 minutes on average per day exercising.

In investigating the frequency of self-exercise without therapists, we found that 78.5% of the high performance hospital group carried out self-exercises without therapists compared with 38.3% of the low performance hospital group.

Measurement of exercise in the wards (compared to exercise in the rehabilitation care room), showed that 92.8% of the high performance hospital group carried out such exercises compared with 40.4% of the low performance hospital group.

DISCUSSION

In previous research on the effects of rehabilitation interventions, increased functional skills on admission to rehabilitation, early initiation of rehabilitation services, and rehabilitation in an interdisciplinary versus multidisciplinary setting have been shown to improve ADL. [11] In this study we examined whether such factors differed between hospitals. In particular, we looked for factors that are important in Japan. We used a two-step method to find out whether there were differences between hospitals in the distributions of improvements in ADL. First, we used patients' data to predict what FIM™ score would be at the time of discharge. Then, as the index of ADL improvement, we used the difference between the predicted and the actual FIM at the time of discharge. Next, we looked for differences between those hospitals with relatively greater ADL improvement and those with relatively less ADL improvement.

Although FIM™ score was predicted at the time of discharge in the same case mix conditions by adjusting for triage at admission, each hospital showed a variety of differences from the measurement value. As a result of analyzing which factors produced the differences among the hospitals, it was found that there was a difference in the pattern that each hospital provides health care services.

We examined the each hospital's structure and process of providing health care services represented by the participation of physician registered as a rehabilitation specialists to JARM and the execution of conferences, and found that the hospital group with high performance showed participation and execution rates over two times more than in the hospitals group with low performance . This result confirms prior research, and emphasizes the importance of providing rehabilitative health care services by PT, OT, ST, nurses, and ward staff in addition to rehabilitation specialists (Stroke Unit).[12-19]

In the amount of exercise per day, self-exercise rates, and ward-exercise execution rates, it was found that the hospital group with high performance had more patients exercising than the other hospital group with low performance.

In Japan, all residents are provided with social insurance for medical expenses. For treatments including rehabilitation, PT, OT, and ST, the amount of time given to each treatment must be reported, and reimbursement is limited to the cost of 180 minutes per day. However, that limit was not set on the basis of any evidence. This study provides evidence of the effects of PT, OT, ST, exercise in wards, and self-exercise without therapists.

Patients exercised for about 12 to 13 minutes more per day in the hospital group with high performance than in the hospital group with low performance. This is a relatively large difference even when allowing that the criterion for health care treatment puts a limit exercise per day at 180 minutes in Japan. While this data is not explored in this study, if the results of cluster analysis as shown in Figure 2 were divided into three groups, Hospital A would be in a class of its own. Hospital A was a medical organization that showed far superior therapeutic achievements to all the other hospitals. We asked Hospital A for an interview and found that since the hospital had not been open to the public for a long time, there was more health care staff than patients. Our interview found that regardless of the actual time period prescribed by health care criterion, the health care staff actively had patients take more exercise.

Considering that the limitation of exercise to 180 minutes per day in Japan is far from the standards introduced by the US stroke rehabilitation guidelines,[19] we anticipate that improvements in results will be seen if hospitals increase the amount and frequency of exercise beyond the maximum limit required in Japan.

In the same context, the increases in self-exercise execution rates and ward-exercise execution rates are due to escalating therapeutic achievements that are possible. In addition, therapeutic achievements show the importance of daily exercise for patients rather than by separating the wards from physical therapy rooms and exercising only for rehabilitation. In order to promote and increase the total amount of patient exercise and so on in wards, the health care patterns in hospital teams needs to be systematized more concretely and realistically.

The present finding that more intense training was associated with greater improvement in ADL is consistent with the results previously reported.[20-22]

Meanwhile, there was no significant difference of the ratio of discharged patients to home between the hospital group with superior therapeutic achievements and the hospital group with inferior therapeutic achievements. A re-examination of the appropriateness of the ratio of discharged patients to home, one of the P4P assessment criteria applied to recovery rehabilitation wards presently in Japan, may show whether it is an appropriate criterion. There is a high possibility that there may exist a number of confounding factors in addition to the endeavor of medical teams and the hospital system likely to affect patient decision-making in discharging from hospital to home. For instance, when the conditions of patients were the same at the time of discharge, there was a 20.2% difference in the ratio of

discharge to patients' home, depending on their different environments, such as patients' domestic circumstance, and whether or not they could be nursed.

Limitations of the findings

The *Rehabilitation Patient Databank* used in this study went through 7 updates over 3 years, with measures taken to ensure its reliability. Although there was a manual of data-entry procedures, we can not be absolutely sure that all of the physicians and therapists who entered data into the system used the same criteria in their evaluations. In addition, we studied variables related to rehabilitation therapy and ADL, but we were not able to control for medical findings other than those related to post-stroke rehabilitation. However, all of the hospitals that participated in this study actively cooperated with efforts to improve the quality of rehabilitation treatment in Japan. We divided the hospitals into high-performing and low-performing groups, and there may be some limit to the generalizability of these findings to all rehabilitation hospitals in Japan.

CONCLUSION

This study focused on patients in recovery in the rehabilitation ward using the data of 680 patients from 12 hospitals after adjusting for triage at admission obtained from the databank (issued in September, 2009) in Japan and compared the therapeutic results of each hospital. The comparison found that there were statistically significant differences in the results of therapeutic achievement in each hospital. In the hospital group with superior therapeutic achievements, there were greater amounts of exercise and a higher participation rate of rehabilitation specialists compared with the other hospital groups with inferior therapeutic achievements, which suggests the importance of frequent health care treatments and exercise. Due to the assessments for health care quality and the publication of results conducted in a number of first world countries such as the US and the UK, it is expected that health care providers will put a voluntary effort to improve their future health care services. Nevertheless, prior to such effort of medical providers, the development of criteria to assess health care quality and to verify their validity is required.

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conflicts of interest in this work.

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Table 1 The prediction equation for FIM™ score at the time of discharge

Dependent variable: FIM™ score at the time of discharge	B	*P*
Motor FIM™ at admission	0.432	P<.001
Cognitive FIM™ at admission	0.439	P<.001
Age	-0.093	P<.001
Number of days from the onset of the stroke until admission	-0.068	0.004
Modified Rankin Scale score before stroke	-0.049	0.036
Adjusted R^2 = 0.649	(F = 235.550**)	

Estimated scores were obtained from regression analysis with FIM™ score at discharge as a dependent variable and motor FIM™ score, cognitive FIM™ score at admission, age, number of days from the stroke until admission, and modified Rankin Scale score before stroke, diagnosis as independent variables. Diagnosis was excluded by regression model

Table 2 Distribution of quality of health care in each hospital

Hospital	N	Good N (%)	Fair N (%)	Poor N (%)
A	13	6 (46.2)	6 (46.2)	1 (7.7)
B	32	10 (31.3)	16 (50.0)	6 (18.8)
C	21	6 (28.6)	11 (52.4)	4 (19.0)
D	30	12 (40.0)	11 (36.7)	7 (23.3)
E	8	2 (25.0)	4 (50.0)	2 (25.0)
F	68	22 (32.4)	28 (41.2)	18 (26.5)
G	52	24 (46.2)	13 (25.0)	15 (28.8)
H	256	105 (41.0)	71 (27.7)	80 (31.3)
I	13	2 (15.4)	6 (46.2)	5(38.5)
J	13	2 (15.4)	5 (38.5)	6(46.2)
K	22	3 (13.6)	7 (31.8)	12(54.5)
L	76	7 (9.2)	23 (30.3)	46(60.5)

"Good" (a group whose prediction value was higher than its measurement value: over 6);
"Fair" (a group whose prediction value was supposed to be equal to its measurement value: from –4 up to 5);
"Poor" (a group whose measurement value is below its prediction value: over 5).

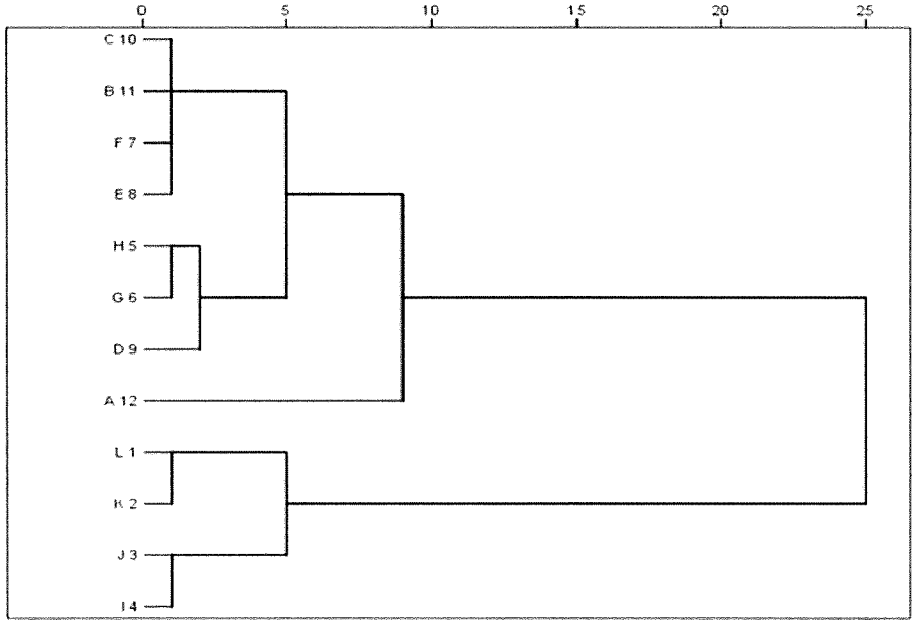
Table 3 Results of analyzing the differences between the high performance hospital group and the low performance hospital group

	High performance hospital group Mean SD [95%CI]	Low performance hospital group Mean SD [95%CI]	*P*
FIM™ improvement	30.3 points 15.0	19.0 points 18.2 [-14.32-8.35]	P<.001
FIM™ improved per day	.36 points .14	.17 points .23 [-0.22-0.02]	P<.001
The ratio of discharged patients to home	80.5%	76.6%	0.154
Length of stay	86.4dys 36.9	113.49dys 37.4 [18.2-32.3]	P<.001
Participation of rehabilitation specialist	60%	31.9%	P<.001
Conference execution rate	69.2%	29.9%	P<.001
Amount of exercise (PT, OT, ST) per day	82.9 min	70.6 min	P<.001
Self-exercise without therapists	78.5%	38.3%	P<.001
Exercise in wards	92.8%	40.4%	P<.001

Notes: * The conference execution rate is based on the fact that people with more than three types of occupation took part in the conference more than once a week. However, the definition of the conference execution rate was not clear in the data provided before 2008.

Abbreviations: OT, occupational therapist; PT, physical therapist; ST, speech therapist.

Figure 1 Results of cluster analysis



High performing hospitals and low performing hospitals were respectively identified and accordingly assigned to each cluster in order to test what factors influence the difference. The group rated as "poor" in terms of FIM gain was used as a criterion for cluster analysis

5 リハビリテーション患者データベースとの連携の可能性

近藤克則，小林祥泰

▶脳卒中急性期患者データベースと連携できるリハビリテーション患者データバンクを開発している．
▶ver3.1では，リハビリテーション実施計画書や日常生活機能評価表，業務統計作成も可能で，登録患者数は3,200人を超えた．
▶暗号化されたデータを電子メールでやりとり可能で，地域連携クリティカルパスの一つのテンプレートとなりうる．

医療構造改革（第5次医療法改正）に基づき，都道府県が策定する医療計画のなかで，4疾患について医療機能の分化と連携の計画を明記することになった．その4疾患の一つが脳卒中である．また2008年の診療報酬では，発症から診断，治療，リハビリテーション（以下，リハビリ），在宅療養まで，複数の医療機関，施設にまたがって作成する一連の診療計画「地域連携クリティカルパス」が，脳卒中についても算定可能となった．

このような変化に対応し，脳卒中急性期患者データベースが，リハビリ病院のもつデータベースとの連携を進められれば，単に急性期脳卒中に関する情報源にとどまらない付加価値をもつことになる．

リハビリテーション患者データバンクの開発状況

筆者らは，すでに脳卒中急性期患者データベースとの連携を視野に入れたリハビリテーション患者データバンクの開発に着手している[1]．脳卒中急性期患者データベースの項目を基に，リハビリ医療で必須と思われる日常生活動作（ADL）評価などの項目を加え，必ずしも必要と思われない項目は必須項目から外した．2005年度にver1.0を開発し，その後改訂を重ね2008年度にはver3.1にバージョンアップしている（図1）．診療報酬を請求するうえで必要なリハビリ実施計画書や日常生活機能評価表や業務統計作成機能なども付けている．

ver3.0からは，脳卒中だけでなく，すべてのリハビリ患者について登録できる台帳とした．そこから，脳卒中と大腿骨頸部骨折については，より詳細なデータが入力できるような構成になっている（図2）．脳卒中リハビリテーション患者データベースの必須項目数は約100項目である（図3）．累積登録患者数は，2005年度末の158人から，2006年度末885人，2007年度末2,013人へと増え，2008年7月に3,200人を超えている（図4）．2008年度には，認知症や慢性期のリハビリ患者に関する情報のデータベースの開発にも着手している．

2つのデータベースの結合の可能性

脳卒中急性期患者データベースとリハビリテーション患者データベースの2つのデータベースを結合するために，必要な技術的課題の克服にも取り組んでいる．この2つのデータベースを結合する場合，急性期の退院時データがリハビリ病院の入院時データとなるなど，データ読み込み先フィールド名称などの整合性をはじめとする技術的な問題がある．これらを解決し，2007年度には，暗号化された脳卒中急性期患者データベースのデータを電子メールでリハビリ病院に送り，それをリハビリテーション患者データベースに取り込むことも試みた．今後さらに改善の余地はあるものの，技術的にはほぼ可能となる目途をつけている．

連携による潜在的な付加価値

たとえば，回復期リハビリ病棟への転院後の情報と結合できれば，脳卒中急性期患者データベースは，脳卒中患者の一連の診療における起点（急性期）の情報源となる．都道府県のつくる医療計画では，疾病ごとに医療機能の分化・連携の推進状況を評価するための具体的な数値目標を設定するとともに，その事後評価結果を踏まえ，必要に応じ医療計画を見直すとされている．2つのデータベースを連携して運用できるようになれば，連携に関する数値目標の達成状況の把握が可能となる．

また，現在各地で作成が進んでいる地域連携クリティカルパスのほとんどは，紙ベースのものである．今後は，電子化されたパスの開発を望む声は多い．2つのデータベースの連携もしくは結合ができるようになれば，急性期からも回復期リハビリ病棟からも，さらには在宅療養の主治医からもアクセスが可能となる．そうなれば，電子化された地域連携クリティカルパスの一つのテンプレート（ひな形）となる．そのデータを分析すれば，図5に示した病院間のパフォーマンス比較や，地域連携クリティカルパスが運用されている地域と，運用されていな

図1●リハビリテーション患者データベースのメニュー画面

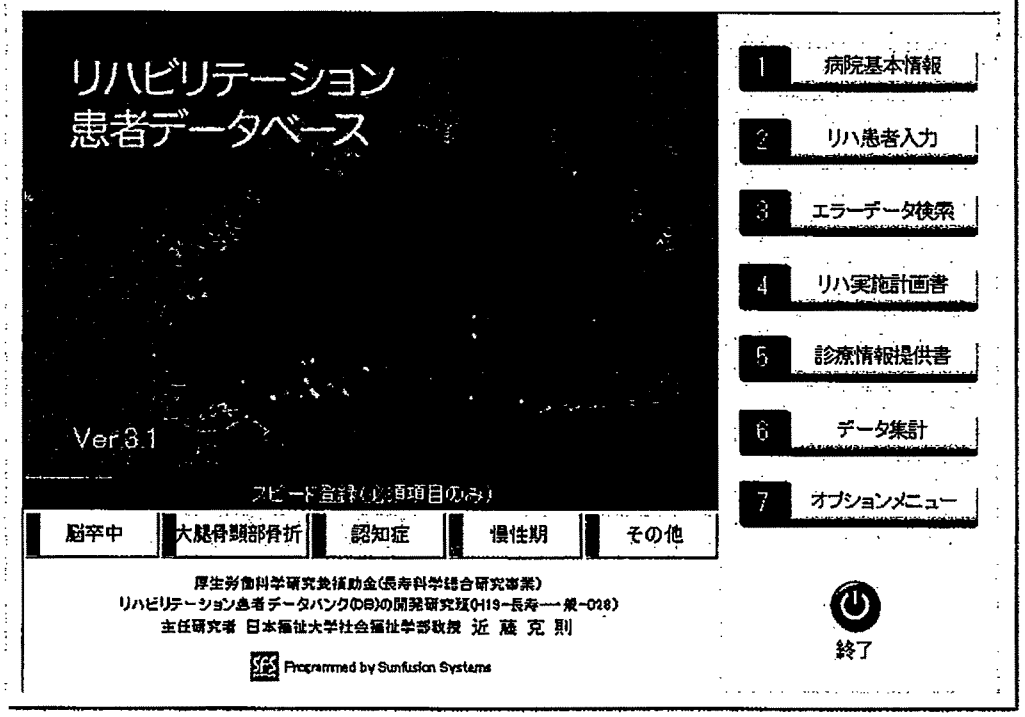
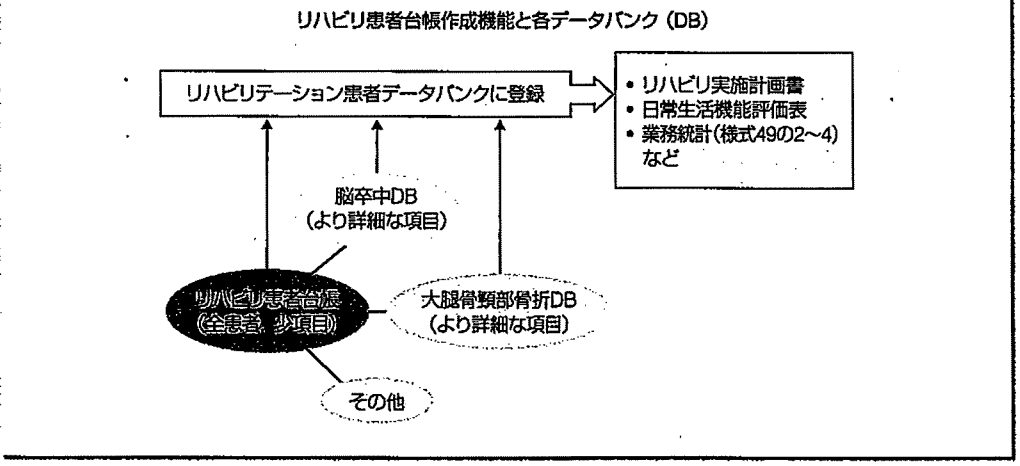


図2●リハビリテーション患者台帳の概念図

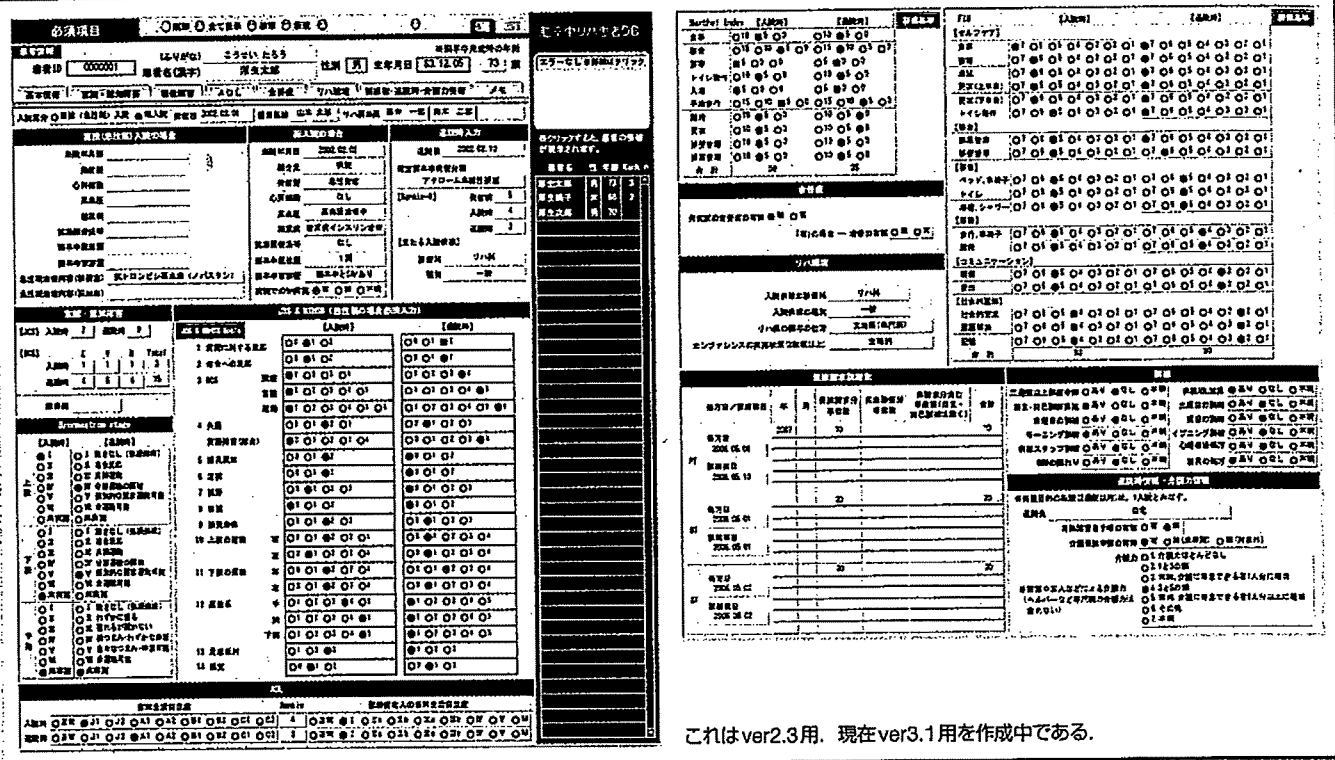


い地域で比べたりすることも可能となる．

急性期に比べリハビリ患者では，その全体像を把握しようとすると必須項目が増える．その結果，データ入力に伴う手間ひまが増えるなど課題も多い．しかし，連携，情報化，データに基づく医療や政策立案に向かう流れが止まるとは考えにくい．一つ一つ課題を克服して，連携による付加価値を追求したい．

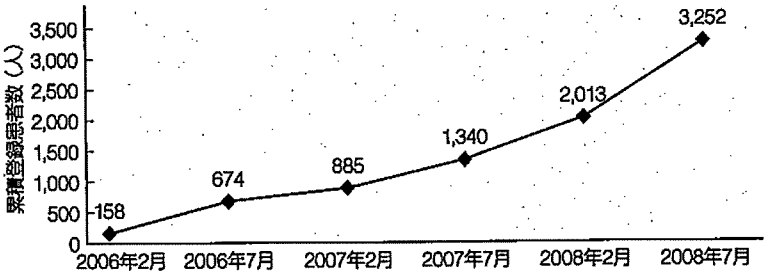
◉文献　1) 近藤克則（主任研究者），リハビリテーション患者データバンク（DB）の開発（H19-長寿-一般-028）総括研究報告書，平成19-21年度厚生労働科学研究費補助金（長寿科学総合研究事業），2008.

図3 ○脳卒中リハビリテーション患者データベースの必須項目一覧



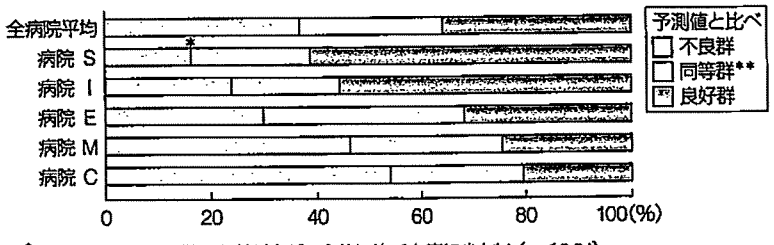
これはver2.3用．現在ver3.1用を作成中である．

図4 ❷リハビリテーション患者データバンクの累積登録患者数の推移



1病院あたり登録患者数は69.1人（最大295人，最小14人）．

図5 ❸退院時FIM予測値と実測値の病院間比較



*予測値と比べ不良群の患者割合が，全体に比べ有意に少ない（$p<0.01$）．
**予測値±5点以内を同等とみなした．
FIM：機能的自立度評価法（functional independence measure）．