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Original Article

Comparative analysis and influencing factors of hospitalization expenses of three single diseases in a tertiary Class A general hospital

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Abstract: Objective: To compare the hospitalization expenses among three single diseases in The First Affiliated Hospital of Hebei North University (a tertiary Class A general hospital), and analyze the factors affecting hospitalization costs, so as to provide some basis for controlling the unreasonable increase of hospitalization expenses as well as to render references for medical management. Methods: By retrospective investigation, we selected the basic information of inpatient medical records and detailed billing of patients hospitalized in our hospital from Jan. 1, 2016 to Dec. 31, 2018. The collected data were sorted based on the International Classification of Diseases (ICD-10). Finally, 1,199 cases of frequently-occurring diseases and common illnesses such as rectal cancer (RC), nodular goiter (NG) and chronic renal failure (hemodialysis, HD) (CRF) were selected to conduct descriptive statistics on influencing factors and cost structure. The influencing factors of hospitalization expenses were identified by one-way analysis of variance (ANOVA) and multiple linear regression analysis. Results: The hospitalization cost of inpatients with RC or CRF (HD) mainly spent on drugs, diagnosis and materials. As to NG, the cost of surgery, diagnosis and materials were the main components of hospitalization costs. Occupation and length of stay (LOS) were identified as the main influencing factors of hospitalization expenses for RC patients. While age and LOS were the main influencing factors of hospitalization cost for NG patients, and LOS alone for patients with CRF (HD). A across-sectional study was conducted on the CRF (HD) patients over 60 years old. Conclusions: In order to reasonably control inpatient medical expenses, comprehensive intervention should be carried out in clinical work, from rational drug use and selection of consumables, to shorten the hospitalization days to an appropriate level and reduce the waste of medical resources.

Keywords: Rectal cancer, nodular goiter, chronic renal failure (hemodialysis), hospitalization expenses, multiple linear regression

Introduction

Strengthening health economic management, reducing medical expenses, and better solving the problem of "difficult and expensive to see a doctor" for ordinary people has become a conundrum of the current medical and health system reform in China [1, 2]. Faced with the financial burden brought by the continuously increased medical expenses on the operation of medical systems as well as the economic burden brought to the people, all countries around the world are trying their best to reform the medical and health systems. Governments of various countries regard the reform of medical expenses as the key measure to control medical costs [3, 4]. All over the world, there are various ways to pay medical expenses. Generally speaking, they can be divided into prepayment system and post-payment system, in which the former includes global budget [5], service unit [6], capitation [7] and diagnosis-related groups (DRGs) based payment [8], while the latter mainly refers to fee-for-service [9].

In 1983, the prepayment system for medical treatment based on DRGs was pioneered in the United States and developed globally in the fol-

lowing 3 decades [10]. Australia, Germany, France, Finland, Japan and other developed countries have established a relatively complete DRGs based payment system [11-15]. In recent years, some developed Asian countries, such as South Korea and Malaysia, have also experimented with DRGs based payment system [16]. There is no doubt that DRGs based prospective payment brings efficiency to the medical system. In evaluation of the implementation effect, this payment mode can save medical resources, reduce the total hospitalization cost per capita and shorten the length of stay (LOS). However, the high requirements for medical information technology, cumbersome payment steps and unreasonable pricing have become the limitations for developing countries to promote this payment system. Therefore, the research on the influencing factors of single-disease hospitalization expenses is to provide the basis for the correct formulation of disease-specific charges, and to more effectively control the rapid growth of medical costs.

In China, the method research of single-disease cost accounting started late, not to mention the research combining the unique situation of public hospitals. Although some domestic scholars have studied the method of single-disease cost accounting [17], the research mainly focuses on theory, with many different views. In this study, we applied theoretical research to practice and put forward corresponding solutions to existing problems through the study and dynamic analysis of actual diseases, the use of clinical pathways to manage single-disease payment, and the docking of the hospital information system (HIS). Based on the existing disease cost accounting methods, this study carried out multi-angle analyses taking the influence of multiple factors on medical expenses into consideration, which realized cost control and factor analysis of single diseases and proposed reasonable suggestions for the health management department to control the increase of medical expenses, rendering valuable references for better formulating a single-disease price-limiting program in the future.

Materials and methods

Data sources

Inclusion criteria: (1) Common and frequently-occurring diseases with clear causes, well-defined pathogenesis, clear diagnosis and treatment standards, unified cure standards, exact curative effect and good prognosis were selected; (2) Admission department is required to be the corresponding ward (excluding referrals from other specialties and cadres wards); (3) Discharge diagnosis was made based on the first page of medical records and the corresponding expense settlement list according to International Classification of Diseases, Tenth Revision (ICD-10 code).

Exclusion criteria: (1) Medical records of non-corresponding wards (including cadres' wards); (2) Patients with incomplete information or complications; (3) In order to ensure the stability and reliability of the data and reduce the interference of outliers and extreme values on the analysis quality, only 99% of the cost data of each single disease was included, and the records with too high and too low cost were eliminated.

By retrospective investigation, all inpatients with rectal cancer (RC), nodular goiter (NG) and chronic renal failure (hemodialysis) (CRF [HD]) hospitalized in our hospital between Jan. 1, 2016 and Dec. 31, 2018 were enrolled [classification standard: ICD-10, Codes: C20, E04.902 and N18 (Z49.151) respectively] [18]. Among them, patients with RC or NG were treated by surgery, and those with CRF (HD) were partially treated by surgery. The extracted data were pre-processed to exclude the cases with missing major variables such as age, gender, LOS and hospitalization cost. After preprocessing, the clinical data of 262 cases of RC, 224 cases of NG and 713 cases of CRF (HD) were collected.

Research contents

In this retrospective study, the hospitalization cost information of all the patients with the above three single diseases hospitalized between Jan. 1, 2016 and Dec. 31, 2018 were collected from the Finance Department and Medical Records Department of the hospital. There were 262 cases of RC, 224 cases of NG and 713 cases of CRF (HD). Based on the information on the first page of medical records, the possible influencing factors of hospitalization expenses were extracted, such as gender and age, admission conditions, discharge conditions, actual LOS, outpatient service and discharge diagnosis consistency, preoperative

Table 1. Distribution of hospitalization expenses of three single diseases in a tertiary Class A general hospital (CNY)

Name of single diseases	Median	Maximum value	Minimum value	Interquartile range
Rectal cancer	61095.22	124085.94	2856.01	23744.97
Nodular goiter	16129.02	74075.91	11223.29	2335.375
Chronic renal failure (hemodialysis)	12085.92	146145.51	142.82	10796.57

and postoperative diagnosis consistency, and the grading of surgical incision (if any). In order to ensure the accuracy of the research data, the double-player and double-machine recording method was adopted to convert all data in EXCEL form after special data entry training, followed by cross-checking and error correcting. The hospitalization expenses of patients, which mainly went to 6 categories including medicines (western medicine, Chinese patent medicine, and Chinese herbal medicine), surgeries (operation and anesthesia), diagnosis (pathology, laboratory, imaging and clinical diagnosis items), treatments (medical service, oxygen therapy, blood transfusion, nursing, non-surgical treatment and handling fee), materials (examination, treatment, and surgical disposable materials), and others, were extracted for analysis. Based on the basic information on the front page of medical records, the socio-economic characteristics, disease features, diagnosis and treatment quality and other indicators of patients were investigated. Data of total hospitalization expenses and various components were collected from the information department. The confidentiality of patient data was guaranteed according to the requirements of the First Affiliated Hospital of Hebei North University Ethics Committee.

Statistical analysis

Excel was used for data input and SPSS 19.0 for description. Descriptive statistical method was used to analyze the basic information of patients and the composition of hospitalization expenses. As hospitalization expenses did not conform to normal distribution but present skewed distribution, a nonparametric rank-sum test was used to compare the difference of hospitalization expenses among different groups of inpatients. The Mann-Whitney U test was used for inter-group comparisons, and the Kruska-Wallis H test was used for multi-group comparisons. Independent variables influencing total hospitalization expenses were screened by univariate analysis, and those with statistical significance were selected. The possible influencing factors of hospitalization expenses of the three single diseases were analyzed by the multiple linear regression model with test level α=0.05.

Results

Analysis of the distribution of hospitalization expenses

In this study, the data of 262 cases of RC, 224 cases of NG and 713 cases of CRF (HD) were collected. The distribution of hospitalization expenses of the three single-disease types was tested by the Shapiro-Wilk test with $P<0.01$, indicating non-normal distribution, so it was not appropriate to use the average cost to describe their distribution. It can be seen from **Table 1** that there was a significant difference between the maximum and minimum hospitalization expenses for CRF (HD), with the largest interquartile range found in RC and the smallest in NG.

Analysis of the composition ratio of hospitalization expenses

In terms of the composition of hospitalization expenses, medicine, diagnosis and materials expenses were the main components for RC and CRF (HD), while operation expenses and others accounted for a relatively low proportion. For patients with NG, the costs of operation, diagnosis and materials were the main components of hospitalization expenses, while the cost of treatment was relatively low (**Table 2**).

Analysis of the composition ratio of hospitalization expenses in different years

Next, we have compared the expenditure between different years in each disease. In rectal cancer patients, the proportion of other ex-

Table 2. Composition ratio of hospitalization expenses of three single diseases in a tertiary Class A general hospital (%)

Name of single diseases	Medicine fee	Operation Fee	Diagnostic fee	Treatment costs	Material expenses	Other charges
Rectal cancer	24.51	9.46	15.99	8.42	33.82	7.80
Nodular goiter	16.28	31.72	22.56	3.95	22.44	3.05
Chronic renal failure (hemodialysis)	35.21	1.80	20.17	20.43	18.64	3.75

Table 3. Composition ratio of hospitalization expenses of three single diseases in different years (%)

Name of single diseases	Year	Medicine fee	Operation fee	Diagnostic fee	Treatment costs	Material expenses	Other charges
Rectal cancer	2016	24.43	9.35	15.12	8.55	32.40	10.15
	2017	24.37	9.78	16.13	8.36	34.35	7.01
	2018	24.73	9.26	16.72	8.35	34.69	6.25
Nodular goiter	2016	16.28	32.04	22.54	4.01	22.46	2.67
	2017	15.28	30.43	21.46	3.88	26.54	2.41
	2018	16.52	31.11	22.56	3.76	22.14	3.91
Chronic renal failure (hemodialysis)	2016	36.38	2.24	28.92	12.42	17.56	2.48
	2017	42.02	1.99	22.96	14.71	15.86	2.46
	2018	32.57	1.65	17.64	23.88	19.82	4.44

penses was relatively high in 2016, while in 2017 and 2018, the proportion gradually decreased, and the proportion of material expenses gradually increased. In general, the change of the proportion of other expenses was relatively balanced. In nodular goiter patients, the proportion of materials expenses was relatively high in 2017, while in 2018, the proportion gradually decreased. Meanwhile, the proportion of other expenses was relatively increased. In chronic renal failure (hemodialysis) patients, the proportion of operation expenses and diagnosis expenses decreased year by year, while the proportion of treatment expenses and other expenses increased (**Table 3**).

Univariate analysis of total hospitalization expenses

The influencing factors of hospitalization expenses (expressed as medians) were statistically analyzed. Gender, occupation, LOS and payment method had statistically significant effects on the hospitalization costs of RC patients ($P<0.05$, **Table 4**); Gender, age, occupation, LOS and payment method were the factors influencing hospitalization costs for NG patients ($P<0.05$, **Table 5**); and, age, occupation, LOS and payment method were statistically associated with the hospitalization costs of patients with CRF (HD) ($P<0.05$, **Table 6**).

Analysis of influencing factors of total hospitalization expenses

The statistically significant variables screened out in 2.2 were assigned values, and multiple linear regression analysis was conducted with occupation, payment method, gender, age and LOS as independent variables and hospitalization expenses as the dependent variable. As shown in **Table 7**, among the three single diseases, LOS was the major influencing factor of hospitalization expenses. In addition, occupation was also the main influencing factor of hospitalization expenses for RC patients and age for NG patients.

Cross-sectional analysis of the factors influencing medical costs in patients aged 60 years with chronic renal failure

To further investigate the influencing factors of hospitalization costs, we conducted a cross-sectional study to analyze the hospitalization costs of patients with chronic renal failure (hemodialysis) over 60 years of age. Clinical information of 350 patients over 60 years old were obtained through screening, the distribution and composition of hospitalization costs are shown in **Table 8**, medicine, diagnosis and treatment expenses were the main components for the patients. The influencing factors

Table 4. One-way ANOVA of factors affecting hospitalization costs of patients with rectal cancer

Variables	Number of cases (n)	Hospitalization expenses (Median, yuan)	F	P
Gender			14.7010	0.0001
Male	157	59537.99		
Female	105	64303.37		
Age			5.6972	0.0579
≤60	70	60677.29		
60-70	100	59844.42		
≥70	92	63599.405		
Occupation			63.0820	<0.0001
Farmer	131	54704.93		
Cadres or retired cadres	25	51128.06		
Others	106	64600.06		
Length of stay			24.0820	<0.0001
≤14	72	36659.99		
14-22	118	62398.61		
≥22	72	73069.98		
Payment			328.3200	<0.0001
Out-of-pocket payment	10	64187.62		
Medical insurance payouts	227	61089.51		
Others	25	55602.73		

Table 5. One-way ANOVA of factors influencing hospitalization expenses of patients with nodular goiter

Variables	Number of cases (n)	Hospitalization expenses (Median, CNY)	F	P
Gender			44.5410	<0.0001
Male	62	16146.60		
Female	162	16113.99		
Age			11.9220	0.0026
≤50	49	14686.39		
50-60	71	15761.06		
≥60	104	17416.21		
Occupation			208.3400	<0.0001
Farmer	105	16132.11		
Worker	6	15469.31		
Student	4	12929.60		
Cadres or retired cadres	18	18608.49		
Others	91	15763.65		
Length of stay			197.9200	<0.0001
≤5	57	16167.27		
5-10	155	15926.79		
≥10	12	23151.77		
Payment			230.8200	<0.0001
Out-of-pocket payment	7	15115.97		
Medical insurance payouts	183	16095.87		
Others	34	16247.27		

of hospitalization expenses (expressed as medians) were statistically analyzed. Occupation, length of stay and payment method had statistical significance on hospitalization cost ($P<0.05$, **Table 9**). Then multiple linear regression analysis found that length of stay was the main influencing factor of hospitalization cost (**Table 10**). The results are consistent with previous analyses of patients with chronic renal failure (hemodialysis) of all ages.

Discussion

At present, the single-disease price-limiting policy implemented in China is a simplified version of DRGs based payment system. After selecting a single disease, how to analyze the influencing factors of its costs, and then propose a relatively reasonable and acceptable price-limiting scheme has become an urgent problem to be solved [19]. At this stage, China should focus on building a bridge between the single-disease price limiting policy and the improvement of DRGs based payment. It may be the future direction of development of the payment mode reform in China to select the common multiple diseases through the disease spectrum, bring them into the coverage of the single disease price-limiting policy, further refine the charging standard according to the characteristics of patients, strengthen supervision, and optimize the

Table 6. One-way ANOVA of factors influencing hospitalization expenses of patients with chronic renal failure (hemodialysis)

Variables	Number of cases (n)	Hospitalization costs (Median, CNY)	F	P
Gender			0.1578	0.6911
Male	351	12085.92		
Female	362	12093.36		
Age			10.4320	0.0054
≤55	265	11357.47		
55-65	196	10857.47		
≥65	252	13851.70		
Occupation			435.5300	<0.0001
Farmer	341	12231.32		
Worker	19	13792.10		
Cadres or retired cadres	93	13478.24		
Others	260	11050.77		
Length of stay			39.4320	<0.0001
≤7	194	6254.45		
7-13	162	9952.96		
≥13	357	17521.16		
Payment method			614.3200	<0.0001
Out-of-pocket payment	41	10873.49		
Medical insurance payouts	564	12085.92		
Others	108	11972.93		

single-disease charging system by constantly expanding the scope and path standard of each of the diseases.

After analysis, it was found that the distribution of hospitalization expenses of the 3 single diseases selected in this study did not conform to a normal distribution. Among them, there was a big difference between the maximum and minimum hospitalization expenses of CRF (HD), with the largest quartile range for RC and the smallest for NG. The reason may be due to the different conditions of different patients, as well as differences in sensitivity to drug treatment. In terms of the median cost of hospitalization, RC patients had the highest median expenses, suggesting that patients with RC have a heavy burden of hospitalization expenses, which is consistent with the results reported in a foreign study [20].

From the perspective of the structure of hospitalization expenses of the 3 single diseases, the costs of drugs, diagnosis and materials were the main components of hospitalization expenses for RC and CRF (HD), while operation, diagnosis and material expenses were the main components for NG. It indicates that hospitalization expenses are somewhat unreasonable. In the comparison of the expenditure between different years, the results also reflected the imbalance of the hospital expenses. For RC and CRF (HD), the treatment cost including nursing cost, which represent the labor value of medical staff, were both at a low level. It shows that the labor value of medical staff in the current hospitalization cost is largely not reasonably reflected, which needs to be restructured and optimized. However, in 2018, the proportion of the treatment cost was increased in CRF (HD) which means the issue mentioned before was improved on the one hand, on the other hand, the proportion of other expenses was increased as well which still remains to be improved. In addition, the cost of materials accounted for a relatively high proportion in patients with RC and NG. Therefore, we believe that by establishing an information-based supervision platform for medical consumables, we can keep abreast of the status quo of use of medical consumables, analyze the rationality and necessity of the use based on systematic data, and timely feedback the analysis results to relevant departments for improvement. At the same time, it is recommended to comprehensively predict the daily consumption of medical consumables through the construction of information platform and data analysis, carry out long-term cooperation with companies with good reputation and strong distribution capabilities, and achieve "zero inventory" of hospital consumables through regular distribution of consumables to departments by distributors, so as to improve the efficiency and effectiveness of the use of consumables. Among the hospitalization expenses of patients with CRF (HD), drug expenses accounted for the highest proportion. The medicine fee, a major component of hospital-

Table 7. Multivariate linear regression analysis of influencing factors of hospitalization expenses of three single diseases in a tertiary Class A general hospital

Disease type	Influencing factor	Regression coefficient	Standard error	Standard regression coefficient	t	P
Rectal cancer	Constant	22023.621	8254.567	-	2.668	0.008
	Occupation (farmers =0, cadres or retired cadres =1, others =2)	3255.955	1174.256	0.141	2.773	0.006
	Payment method (out-of-pocket payment =0, medical insurance payouts =1, others =2)	2842.806	3073.612	0.047	0.925	0.356
	Gender (female =0, male =1)	-2650.102	2277.242	-0.059	-1.164	0.246
	Age (years)	-23.590	111.042	-0.011	-0.212	0.832
	Length of stay (days)	1783.171	154.133	0.586	11.569	0.000
Nodular goiter	Constant	2483.923	1734.671	-	1.432	0.154
	Occupation (farmers =0, workers =1, students =2, cadres or retired cadres =3, others =4)	-127.953	137.524	-0.046	-0.930	0.353
	Payment (out-of-pocket payment =0, medical insurance payouts =1, others =2)	21.269	632.207	0.002	0.034	0.973
	Gender (female =0, male =1)	557.604	575.036	0.047	0.969	0.333
	Age (years)	98.050	24.248	0.196	4.044	0.000
	Length of stay (days)	1351.966	101.567	0.646	13.311	0.000
Chronic renal failure (hemodialysis)	Constant	-18.645	2975.032	-	-0.006	0.995
	Occupation (farmers =0, workers =1, cadres or retired cadres =2, others =3)	416.057	381.495	0.032	1.091	0.276
	Payment (out-of-pocket payment =0, medical insurance payouts =1, others =2)	781.476	1200.728	0.019	0.651	0.515
	Gender (female =0, male =1)	660.087	1073.460	0.018	0.615	0.539
	Age (years)	10.254	40.815	0.007	0.251	0.802
	Length of stay (days)	1110.872	52.707	0.622	21.076	0.000

Table 8. Distribution and composition ratio of hospitalization expenses of patients with chronic renal failure (hemodialysis) over 60 years old

Name of single diseases	Hospitalization expenses [Median (min, max), yuan]	Medicine fee (%)	Operation fee (%)	Diagnostic fee (%)	Treatment costs (%)	Material expenses (%)	Other charges (%)
Chronic renal failure (hemodialysis)	13184.41 (14.82, 141207.95)	36.12	1.43	20.07	20.73	18.21	3.44

Table 9. One-way ANOVA of factors influencing hospitalization expenses of patients with chronic renal failure (hemodialysis) over 60 years old

Variables	Number of cases (n=350)	Hospitalization costs (Median, CNY)	F	P
Gender			2.6301	0.1048
Male	162	13395.52		
Female	188	13052.75		
Occupation			134.6300	< 0.0001
Farmer	169	13098.92		
Worker	9	9041.12		
Cadres or retired cadres	74	17260.70		
Others	98	12092.27		
Length of stay			15.1520	0.0005
≤7	89	7020.85		
7-13	71	10359.94		
≥13	190	19186.075		
Payment method			358.2200	< 0.0001
Out-of-pocket payment	17	13164.95		
Medical insurance payouts	282	13134.83		
Others	51	13536.84		

ization expenses, is also the main factor of medical cost growth. So, it is suggested that hospitals should implement an open and transparent procurement plan for drugs, strengthen rational drug use and avoid drug abuse, control the increase of drug costs, and put an end to irrational drug use from the source. There are different varieties of similar drugs, and clinicians have a wide range of choices. Although China has achieved zero bonus for hospital drugs, doctors may choose to use drugs with higher prices because of the existence of drug rebates, which still leads to the rapid growth of drug costs in hospital expenses. Therefore, the focus of hospitalization expenses control should be on controlling drug expenses, via cutting off the gray interest chain and reducing drug prices. Second, hospitals can monitor doctors' daily drug use through intelligent auditing software and establish strict control measures for those with excessive and irrational drug use. The diagnosis fee also accounted for a relatively high proportion in the hospitalization expenses of the three single diseases. The reason may be that some unnecessary inspections for disease diagnosis increase the hospitalization expenses of patients during hospitalization. So, we suggest that hospitals strengthen information construction, realize mutual recognition of inspections with in medical groups and among tertiary medical institutions to lower excessive hospitalization expenses caused by repeated inspections, reduce or eliminate inefficient or ineffective inspection items, and improve the effectiveness and efficiency of examination methods.

From the screening results of factors influencing hospitalization expenses of the three single diseases, we found that occupation and LOS are the main influencing factors for RC patients. The hospitalization expenses of cadres (high-ranking officials) and retired cadres were higher than those of farmers, workers and others. The difference, we speculate, may be due to the pursuit of different medical services and the medical security system the patients participate in. Age and LOS were identified to be the main influencing factors of hospitalization expenses for patients with NG. Generally speaking, the medical cost grows with the age, which may be related to poor resistance of the elderly, easy concealment of the disease and higher susceptible to complications. Since age is an uncontrollable factor in hospitalization costs, there are no specific prevention and control measures. LOS was the main factor influencing hospitalization expenses for patients with CRF (HD) which was further confirmed by a cross-sectional study on the patients over 60 years old. LOS is recognized as the main factor affecting hospitalization expenses [21], with a positive association between the two. The reason is that LOS can generally reflect the severity of the disease, and the more severe the illness, the longer the hospitalization time. At the same time, different surgical modalities result in differences in hospitalization costs. We believe that high quality and excellent efficiency are the most effective measures to shorten the average LOS. By improving the hospital's medical level and strengthening medical man-

Table 10. Multivariate linear regression analysis of influencing factors of hospitalization expenses of Chronic renal failure patients over 60 years old

Disease type	Influencing factor	Regression coefficient	Standard error	Standard regression coefficient	t	P
Chronic renal failure (hemodialysis)	Constant	3370.539	2473.570	-	1.363	0.174
	Occupation (farmers =0, workers =1, cadres or retired cadres =2, others =3)	-193.027	593.716	-0.013	-0.325	0.745
	Payment (out-of-pocket payment =0, medical insurance payouts =1, others =2)	-677.220	1860.204	-0.015	-0.364	0.716
	Gender (female =0, male =1)	1251.973	1613.394	0.033	0.776	0.438
	Length of stay (days)	1103.923	68.657	0.656	16.079	0.000

agement, as well as reducing ineffective and inefficient hospitalization days to shorten the LOS, the unreasonable growth of hospitalization costs can be controlled, and the efficiency of medical services and the utilization rate of health resources can be improved. There are some deficiencies in this study. First, the study was only conducted in only one tertiary Class A general hospital, but not in different hospitals in the same region or different hospitals in different regions, so the results were obviously biased. Second, single disease settlement brings difficulties to hospital management, but this paper fails to reflect the insufficiency.

In a word, on the premise of improving the level of health services, it is necessary to standardize the management of RC, NG and CRF through adopting single-disease management measures, establishing and improving medical technical standards, and integrating all aspects of strength, so as to make the increase of hospitalization expenses more reasonable to effectively reduce the disease burden of patients. Besides, we can rely on the hospital information system to strengthen the cost management of diseases and departments, optimize the internal management system, and reduce the costs of disease diagnosis and treatment and department operation, thereby further promoting the reform of modern hospital management system. Furthermore, it is suggested to control the cost of single diseases according to the single-disease clinical approach, so that the payment of single diseases can be truly reasonable and feasible.

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