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Assessment of the Medical insurance Information System at the Municipal Medical insurance Administration in Qingdao

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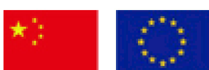

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Abbreviations

DRG – Diagnostic Related Groups

IT – Information Technology

LAN – Local Area Network

MS - Microsoft

PC –Personal Computer

Project – EU China Social Security Reform Co-operation Project

PROMISS – Pilot Provincial Modernisation Initiatives for Social Security

RMB – Yuan

SQL – Structured Query Languages

TB - Terabyte

1 Introduction

This report summarizes results of discussions of the expert with representatives of the municipal medical insurance administration in Qingdao during the period November 10-14, 2008. The discussions were focused on the assessment of the medical insurance information system that supports operations of the municipal medical insurance administration.

2 Medical insurance in the municipality Qingdao

2.1 Coverage, contributions, benefits and remuneration of providers

The history of medical insurance in Qingdao (as in China generally) is relatively short. It began in 2000 when employees of state and private enterprises started to be covered on a mandatory basis by the basic insurance scheme. The coverage was extended also to retirees from the enterprises and to employees of the state enterprises in bankruptcy. The municipal medical insurance scheme currently covers 2,06 million insurees.

The range of covered persons was widened by employees of public not governmental entities (schools, hospitals etc.) in 2001. The next steps stretched the coverage on employees of governmental entities and on self-employed persons. The envisaged step should extend the medical insurance coverage to the rest of permanent residents of the municipality, mainly to elderly, disabled, unemployed, students and children.

The municipal medical insurance administration covers 4 districts out of 7 in the Qingdao municipality. The remaining three districts and the 5 counties have their own medical insurance schemes and their own insurance pooling. It is assumed that all these medical insurance schemes will be vertically integrated in future and the pooling will take place at the municipal level.

The following table summarizes contribution rates for the different categories of insurees:

Category	Rate[1]	State subsidy
employers	9 %[2]	
employees	2 %	
retired	300 RMB	600 RMB
disabled	150 RMB	750 RMB
unemployed	180 RMB	720 RMB
students	20 RMB	20 RMB
children	40 RMB	60 RMB

Table 1 Contribution rates in the municipal medical insurance scheme in Qingdao

[1] Annual rates

[2] It was 8 % in 2007.

The benefit package for employees is oriented towards major risks as in-patient care and treatment of selected diagnosis in out-patient care. Cost sharing schema includes deductibles, co-insurance and a ceiling for the coverage -see the following table:

Annual expenditures for health care (RMB)	Co-insurance rate
< 5 000	16 %
50 00 – 10 000	14 %
10 000 – 20 000	12 %
20 000 – 60 000	5 %
> 60 000	No coverage of the Basic Insurance Schema

Table 2 Co-insurance in in-patient care in the municipal medical insurance scheme in Qingdao

The ceiling 60 000 RMB can be alleviated by a supplemental insurance called Medical Aid program that for a contribution of 50 RMB rises the ceiling to 200 000 RMB annually.

Regarding deductibles they are applied for in-patient stays according to the following table:

Order of a hospital stay	Deductibles (RMB)
1st stay in a hospital	840
2nd stay in a hospital	420

Table 3 Deductibles in in-patient care in the municipal medical insurance scheme in Qingdao

These deductibles apply only for the 1st and 2nd categories of hospitals, for the 3rd category of hospitals is not required. There other cost sharing policies above the schemas described, e. g. there is cost-sharing of a patient 10-50 % for specific examinations (CT scanning) or for specific drugs.

Out-patient care, medicines in pharmacies and cost sharing in the hospitals can be paid out the individual saving accounts of the insurees. The holders of the individual savingaccounts are only the employees and the retired persons. The whole individual contribution of an employee and 30 % of the contributions of a employer are assigned to the individual accounts. Assignments to the individual accounts are according to the following table:

Age group of an insuree	Assignment as % of a salary
<35 years	2.3 %
> 35 years	3.5 %
retired[3]	5 %

[3] A minimum annual assignment for retired under 70 years is an equivalent of 60 USD, the minimum annual assignment for retired above 70 years is the equivalent of 70 USD.

Table 4 Assignments to the individual accounts in the municipal medical insurance scheme in Qingdao

There are categories of insurees that have more generous benefits; e.g. people retired before 1949[4] or public servants.

Hospitals are categorized by an accreditation administration into three categories-A (best), B and C. There are currently contracted 6 hospitals in the category A about 30 hospitals in the category B and about 30 hospitals in the category C[5]. The hospitals A get a bonus in remuneration from the municipal medical insurance administration.

The patient's choice of a hospital is predetermined by a referral system from community health centres. The hospitals get a revolving fund from the medical insurance administration for clearing o patients' cost sharing at the end of a year. Such revolving fund is not given to community health centres. Instead of it there is a patient's deposit of 1 000 RMB for 2 months to cover patient's obligations towards the community health centre.

There is a diagnosis specific program for out-patient care in the basic medical insurance schema. There is a list of 43 diseases (diabetics, hypertension etc.) a treatment of which is covered within the basic insurance program[6]. The health care provided by the community health centres was included into the medical insurance benefits in 2006. However, the scope of diseases that can be under long-term surveillance at the community health centres is limited to 18 diseases. Patients should pay out-of-pocket up to 3000 RMB or at most one year and after that starts the insurance coverage for these 18 diseases. Health care above this limit is paid from the medical insurance fund from 70 % if rendered in an out-patient care facility and only from 50 % if treated in a hospital. A chronically ill patient selects freely one community medical centre once a year.

Preventive services are covered from the budget of the Bureau for Public Health. The municipal medical insurance scheme covers only curative services.

There is a supplementary medical insurance for coverage of common diseases in community medical centres. The contribution rate is 8 RMB per employee and 10 RMB per retired annually. The state budget subsidizes the supplementary insurance by additional 10 RMB per insuree annually.

Prices of the services and of the covered medicines are determined by the Price Bureau at the provincial level. The provincial Price Bureau acts according to a methodology set by the central Price Bureau.

There were several modes of remuneration used by the municipal medical insurance administration towards hospitals. Budgets based on average expenditures per patient with additional subsidies for patients with major diseases (about 30-35 diseases qualified for subsidies) were used. If a hospital claims more that the specified budget a negotiation between the medical insurance administration and the hospital takes place. Health care for patients with mental diseases is remunerated by a fixed lump sum per year.

The medicines out the list of essential medicines are paid out-of pocket. However, if a share of patients' out-of-pocket expenses exceeds a threshold specified in an annual contract between the medical insurance administration and a hospital, the hospital is penalized.

The cost containment measures described above apply only to the hospitals for time being. Similar measures towards community medical centres are in a stage of planning. It is

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[4] They have medicines free of charge.

[5] Altogether more than 70 hospitals.

[6] For out-patient care only 18 diseases for employees and 36 diseases for residents.

supposed that the medical insurance administration will remunerate a community medical centre provided that average expenditures per patient don't exceed a specified amount per year.

The municipal medical insurance administration covers also home care and contracts 18 nursing homes for elderly since 2006. The community medical centre has to fill an application form for each qualified elder patient and submits it to the municipal medical insurance administration for approval.

The municipal medical insurance administration introduced a concept of family doctors and a corresponding referral system in 2007. An insuree can select the community medical centre and one family doctor in the centre by signing a contract. If the contract is signed for the whole family insuree's individual saving account can be used for the whole family. The selected family doctor provides for the insuree and his/her family regular preventive check-ups. When a necessary hospital stay is based on a referral from the respective family doctor, the deductible is reduces by half and co-insurance is reduced by 2 % for employees. In case of an emergency stay the referral process has to be finished within 7 days since the hospitalization. The similar arrangement is applied for elderly and disabled not passing their family doctor. I that case the deductible should be reduced to 100 RMB and co-insurance to 30 %. Cancelling of hospital care coverage is envisaged in case of a by-passing of the referral system in case of elderly and disabled residents.

There are currently 152 community medical centres contracted by the municipal medical insurance administration.

The expert visited the Jianlian community medical centre in vicinity of the headquarters of medical insurance administration. The community medical centre has fixed catchments population delineated by an administrative district. As the community medical centre operates in a relatively rich district an income from the medical insurance scheme constitutes only 50 % of the total revenue of the centre. However, it was said that in poorer districts the income from the medical insurance schema approaches 100 %.

The community medical centre serves approximately 150 persons for common diseases daily and it has about 600 persons in a long term surveillance for more serious diseases. It employs 20 doctors; some specialists are hired on part time basis from hospitals.

2.2 Organisation, processes and information system

The medical insurance administration in the Qingdao municipality has 102 employees and additional professionals are contracted for health care reviews. The medical insurance administration is organizationally divided into 10 divisions. There are 4 branches that cover 4 district directly managed by the municipal medical insurance administration.

The information system was delivered by an external software company (a for profit company). It is online connected to hospital information systems of the contracted hospitals and on information systems of the community medical centres. There no on-line connection to the pharmacies. There is no uniform information system in hospitals. On the other hand the information system in community medical centres probably is unified. The medical insurance system is maintained by own IT staff of the municipal medical insurance administration.

It support processes of registration of employers and insurees, keeps track of payments of contributions and processes bills of health care providers. It processes bill, checks their formal validity and randomly selects some 30 % of bills to the individual reviews. The payments to health care providers are bundled on monthly basis.

The insurees of the municipal medical insurance scheme are identified by an insurance card with a magnetic strip. This card has no expiration date and it should be used for pension insurance as well.

Whereas in the operational part the information system of the medical insurance administration has a standard functionality, in a managerial are it seems to provide only basic reports (monthly, quarterly). However, it was said that the IT staff of the medical insurance administration is capable and allowed to add other report according to needs. Average costs and percentage of out-of-pocket payments is monitored for each hospital.

The data from the health care providers are transferred to the medical insurance administration according to a national standard. The diagnosis are coded according to an own list of diseases; nevertheless switch to the ICD-10 classification is envisaged. The coding of services and drugs is according to nationwide lists. They contain about 15 000 services and about 10 000 medicines respectively. The hospitals send very detailed picture of treatment with coding of each service and each medicine rendered to an individual patient[7]. Only two diagnoses are reported for each hospital stay-admission and discharge diagnosis. No secondary diagnoses are reported by the contracted hospitals. It was said that reporting of secondary diagnosis is envisaged for future.

The community medical centres send also detailed data on treatment of patients (the rendered services and medicines) but with no link to individual doctors. This link is planned for the future.

3 Recommendations, open issues

Very limited time frame for analysis of the health information system of the medical insurance administration didn't allow studying of all functionality of the information system in detail. However, the discussions revealed some space for further enhancing capabilities of the information system that could bring major benefits for support of business processes of the medical insurance administration. It is worth to mention especially:

- ***substitution of magnetic strip insurance cards by chip cards with memory enabling recording of medical history,***
- ***elaboration of analytical capabilities of the IT system to facilitate peer comparisons and more detailed monitoring of provision of health care both in hospitals and community medical centres.***

Regarding the first recommendation its principle is to record individual medical history in one's insurance card in order to calculate correct out-of-pocket payments immediately at discharge of the patient or at the end of a treatment in out-patient care. Such measure can alleviate the need of higher deposits required from patients and it can loose patient's link with one specific hospital for annual clearing of his/her cost-sharing.

Regarding the second recommendation it advocates for maximal usage of data that are stored in the operational database for a purpose of a better forecasting of future revenues and expenditures and for the purpose of an effective monitoring of health care costs and quality.

Such enhancement would be also in line with the objectives of the PROMISS project 16 that aims to widen the coverage of the municipal basic insurance scheme to primary health care.

[7] The expert is not sure whether reported services and medicines are associated with the date of provision.

Database model of the medical insurance information system definitely enables to provide valuable information on:

- distribution of (total, private and pooled insurance) health care expenditures among enrolled population for modelling of expenditures according different cost-sharing schemes,
- average costs per case in in-patient care according to different patients' attributes (category of insurance, age, sex, place of living etc.),
- average costs per treatment in out-patient care according to different patients attributes,
- average costs per case/ per treatment according to a clinical group in an appropriate diagnosis based classification,
- structure of average costs per case/per treatment according to the clinical groups and according to type of rendered services and medicines
- structure of average costs per case according to timing of the average stay

The beneficiary is interested in ensuring a quality of health care services rendered by municipal medical centres. This interest coincides with objectives and content of the PROMISS project 16. On the part of the information system this objective may be supported by elaboration of analytic capabilities of the information system monitoring health status and health care activities of registered population/ families at individual family medicine doctors.

Annex

Rapid assessment of the IT solutions

Characteristics of the IT	Municipal medical insurance administration in Qingdao
Supported processes	
Registration of employers	yes
Registration of insurees	yes
Issuance of an insurance card	yes (magnetic strip card)
Collection of contributions	yes
Managing of individual health accounts	yes
Processing in-patient bills	yes
Processing out-patient bills	yes
Remuneration of in-patient facilities	yes
Remuneration of out-patient facilities	yes
Checking of patients' bills	yes (alerts, random sampling of bills)
Internal operations	?
Decision support	
Operational reports	yes
Comprehensive BI solutions	no
Uniqueness of the IT solutions	
One solution	yes
Several co-operating solutions	no
Several isolated solutions	no
Type of the IT solutions	

Centralized web based	yes
Distributed	no
Desktop	no
Platforms	
Operation system	?
Database	?
Networking	Yes (LAN)
Number of users	
Connected on-line	40 (est.)
Off-line	
External interfaces of the IT solutions	
To/from higher level of HI	
-transferred data	set of standard indicators
-way of transfer (paper, on-line, off-line)	paper form ?
To/from lower level of HI	
-transferred data	set of standard indicators
-way of transfer (paper, on-line, off-line)	paper form ?
To/from health care providers	
-transferred data	a detailed bill with services and medicines
-way of transfer (paper, on-line, off-line)	on-line
Development of the IT solutions	
By internal staff of the HIA	no (only some reports)
By an external software company	yes
Usage of packaged solutions	no
Maintenance of the IT solutions	
They are not maintained at all	no
By an external commercial company	no
By an external state/public institution	no
By internal staff of the HIA	yes
Organizational background for IT	
Internal IT department	yes
Contracted specialists	no
Number of workforce	5(est.)
Security of the IT solutions	
Access to the IT solution by an username and password	yes
Access to the IT solution through a personal card	no
Access controlled by another way	no