

Medical device supply system in Japan

- Study on the optional services by
wholesalers -

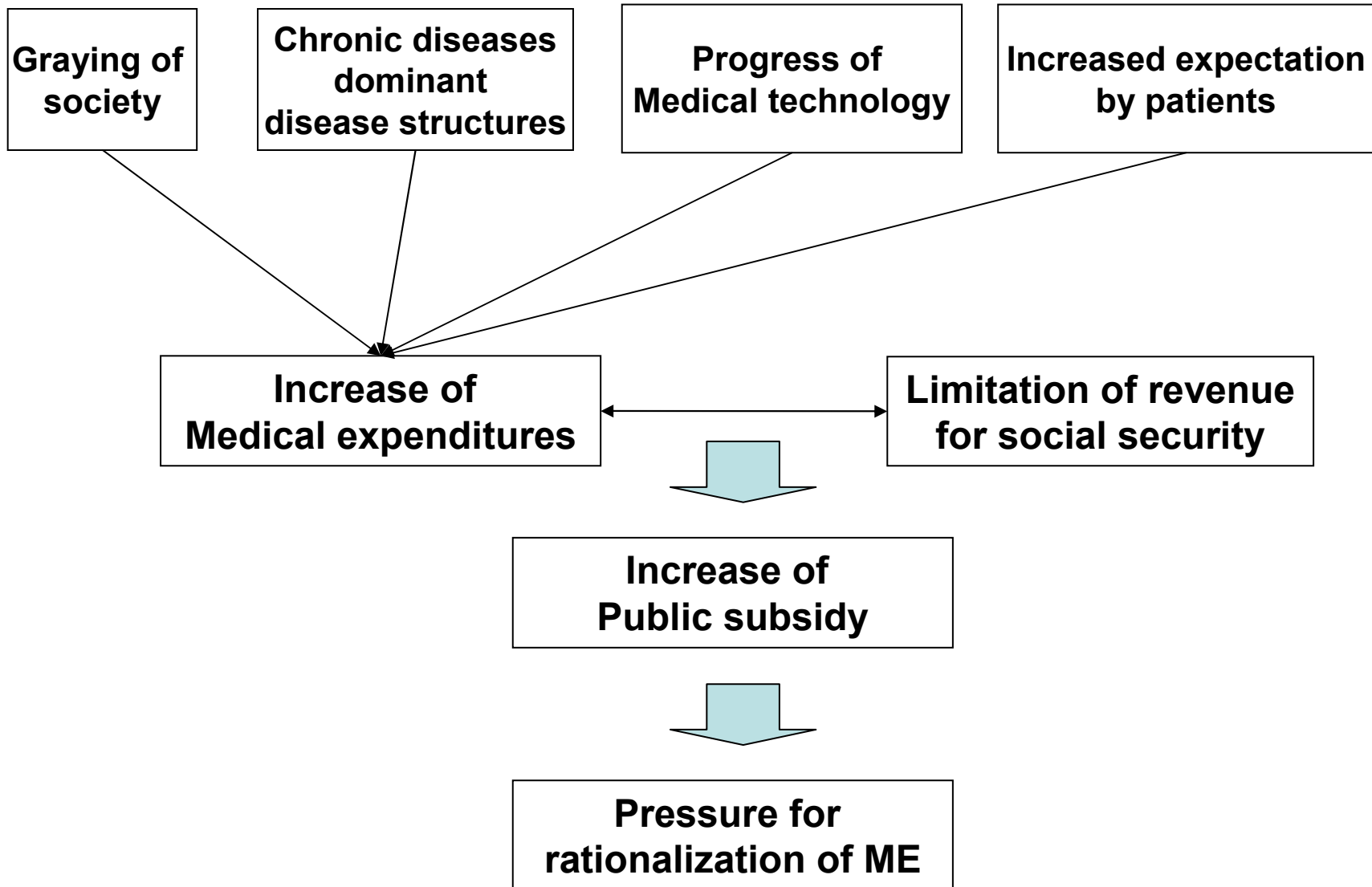
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Professor

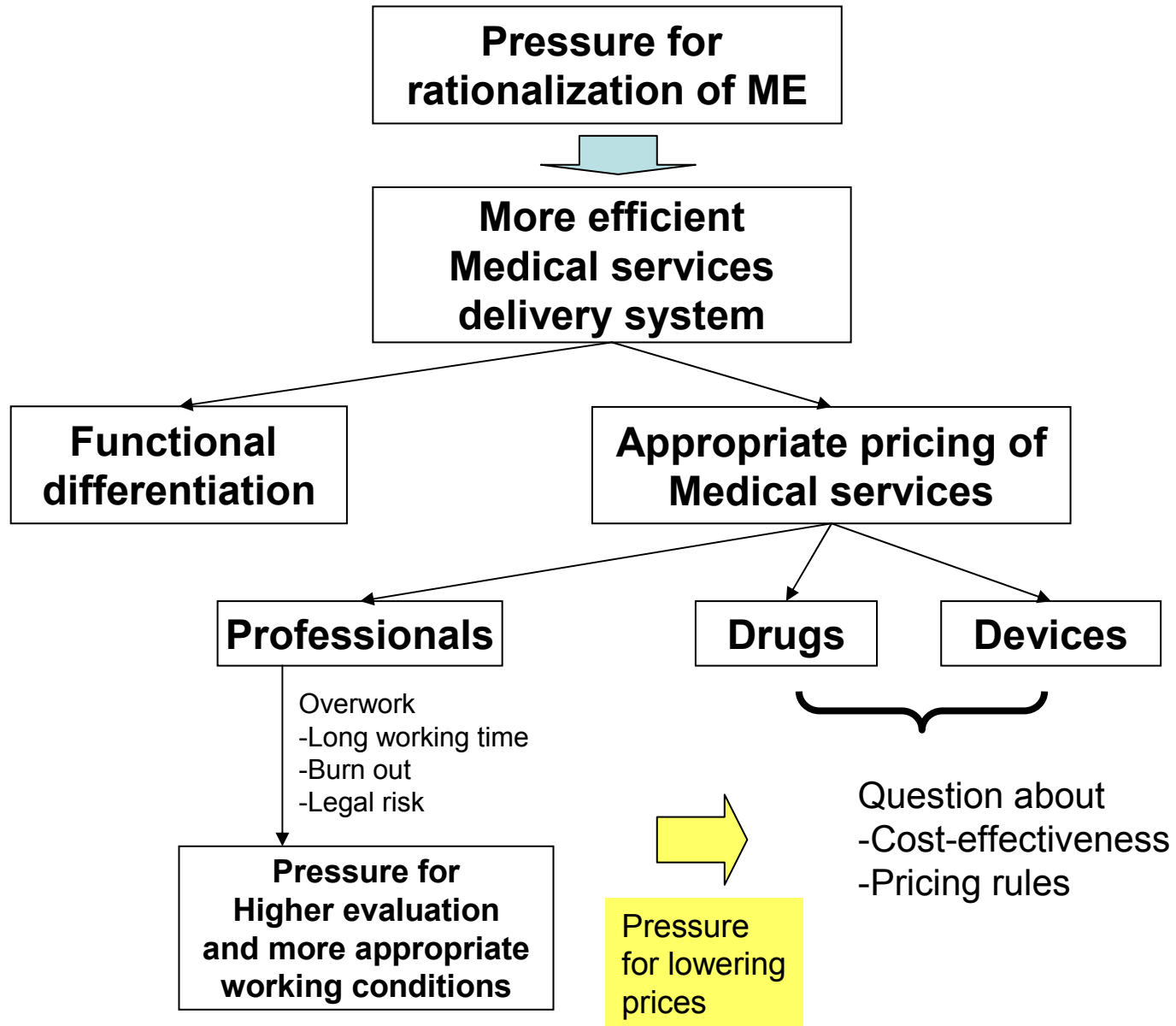
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Situation analysis (1)

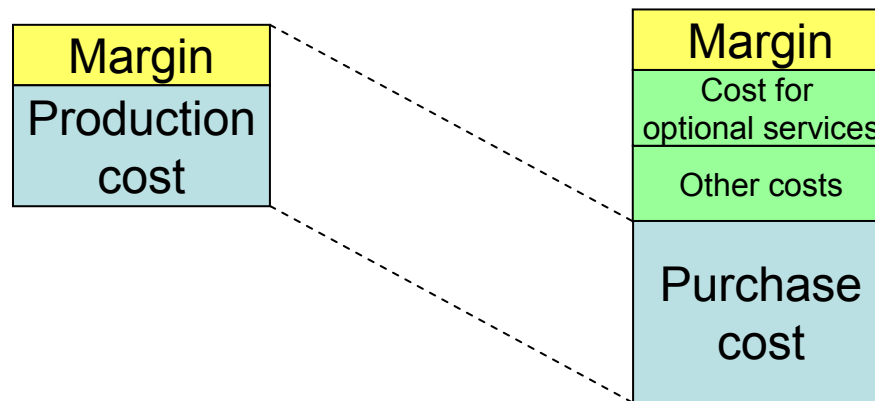


Situation analysis (2)



Situation analysis (3)

Makers → Wholesalers → Medical institutions



Question 1

- Is the purchase price by the wholesalers reasonable?

Question 2

-Is the cost of wholesalers reasonable?

-Do they make enough effort to reduce distributing cost?

Debates on price of medical devices

1. Most of the imported medical devices are very expensive compared with other countries (claims from clinicians).
2. Growing order of “small lot and frequently delivery (Just in time delivery) from medical facilities increases the cost of wholesalers (claims from wholesalers).
3. Various kinds of optional services for medical facilities increase the cost (claims from wholesalers).

However, data about the actual situation have been lacking.

Study on optional services by medical devices wholesalers in Japan

Health Labor Science Grant, H15-Special research-029
Chief researcher: S Matsuda

- Objective
 - Research on the actual situation of optional services delivered by the wholesalers
 - Cost study (Preliminary)
- Subject
 - 377 wholesales for study on optional services
 - 267 wholesalers for study on the activities of cost analysis
 - 1 wholesaler for ABC study at the logistic center

Results (1)

Percentage of wholesales offering the following services (N=377)

	Information service	24 h backup	Assistance for preparation	On-site assistance in OR	Replenishment	Transaction of slip	Offer of related devices or supplies
CT	74.3	9.0	7.2	6.0	6.6	33.5	6.6
MRI	76.5	8.7	6.0	4.7	6.0	31.5	5.4
Automatic CAPD devices	77.0	29.5	29.5	26.2	41.0	50.8	16.4
Surgical endoscope	70.9	13.9	40.6	38.2	41.2	43.6	15.2
Dialysis equipment	78.6	28.2	21.4	15.4	27.4	44.4	14.5
Endoscope	75.2	9.0	29.5	25.7	30.0	37.6	11.9
PTCA	86.1	50.0	48.6	54.9	67.4	54.2	9.0
Coronary Stent	90.0	54.5	53.6	58.2	71.8	53.6	8.2
Abdominal Stent coil	89.3	33.0	49.5	63.1	55.3	58.3	10.7
PTA balloon catheter	87.4	36.3	45.9	53.3	60.0	55.6	9.6
Artificial lung	88.8	48.3	41.6	47.2	59.6	58.4	13.5
Stent and coil for brain surgery	94.3	53.4	54.5	62.5	68.2	56.8	10.2
Artificial Knee joint	82.6	19.8	63.6	43.8	57.9	63.6	19.0
Artificial hip joint	78.2	19.5	58.6	41.4	54.1	61.7	16.5
Spinal implant	87.7	25.5	60.4	50.0	59.4	59.4	17.9
Bone plate	77.4	15.5	49.7	30.3	56.1	56.1	13.5
Intraocular lens	85.5	10.9	30.9	38.2	61.8	56.4	12.7
Heart lung machine	86.8	50.5	45.1	53.8	53.8	45.1	13.2
Device for surgical blood salvage	82.9	31.4	41.0	45.7	56.2	50.5	8.6
Pacemaker	81.4	49.0	43.4	53.8	41.4	60.7	9.7

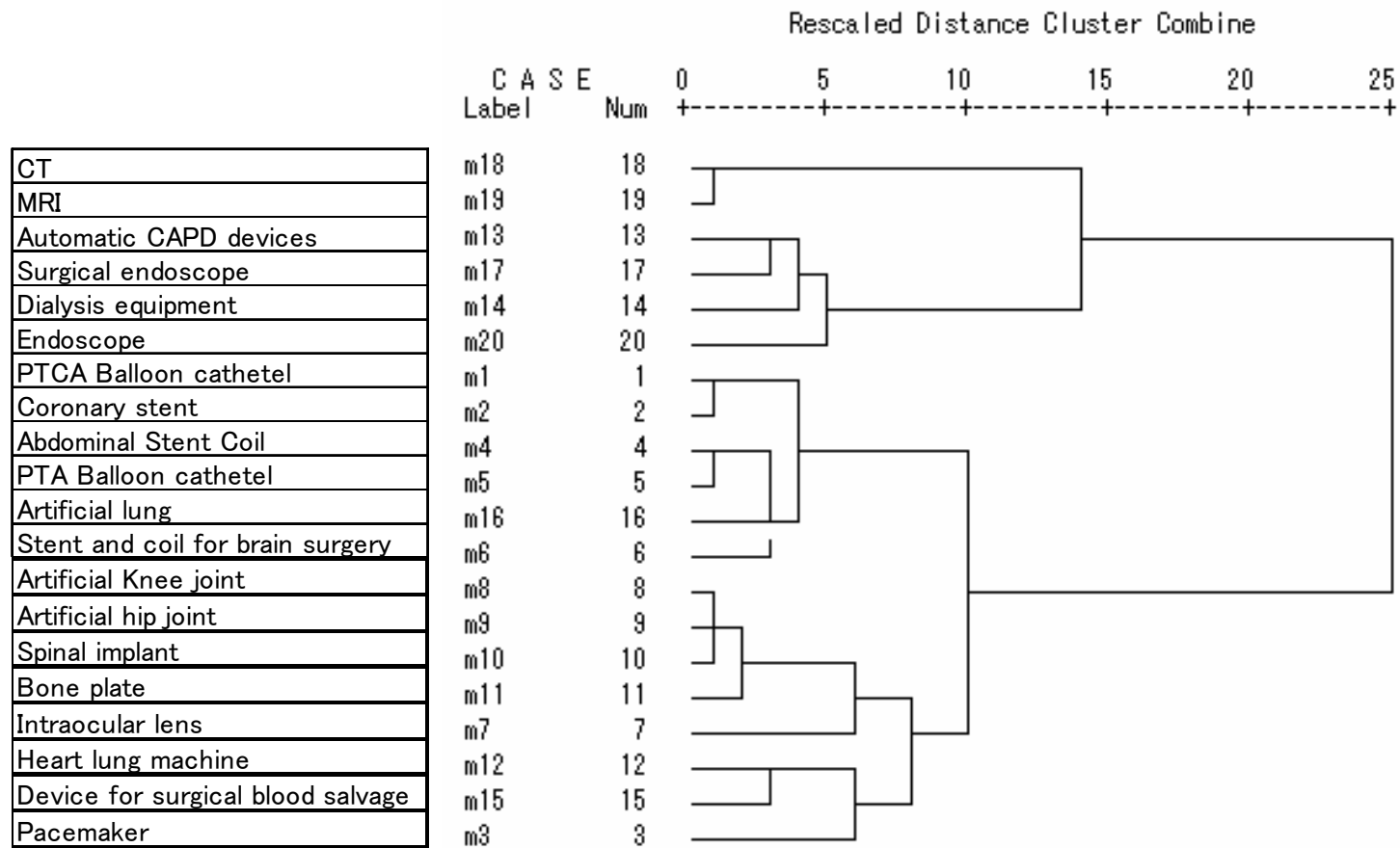
Results (2)

Percentage of wholesales offering the following services (N=377)

	Offer of sample products	Taking over of overdue product	In-house logistic service	Attachment of bar-code	Lease	Maintenance gratis	Maintenance for payment
CT	3.0	0.6	1.2	1.2	1.8	4.8	41.3
MRI	3.4	0.0	1.3	0.7	2.0	3.4	40.3
Automatic CAPD devices	32.8	6.6	18.0	11.5	27.9	9.8	31.1
Surgical endoscope	30.9	4.8	13.9	9.1	26.1	10.3	30.3
Dialysis equipment	34.2	9.4	15.4	6.8	17.1	12.0	40.2
Endoscope	13.3	2.4	5.7	2.9	23.8	13.3	39.5
PTCA	49.3	21.5	27.8	31.9	60.4	8.3	16.0
Coronary Stent	47.3	20.0	29.1	34.5	62.7	5.5	15.5
Abdominal Stent coil	34.0	12.6	23.3	27.2	50.5	2.9	10.7
PTA balloon cathetel	34.8	14.8	20.7	25.9	51.1	3.0	5.9
Artificial lung	27.0	7.9	24.7	34.8	50.6	4.5	19.1
Stent and coil for brain surgery	25.0	18.2	20.5	22.7	56.8	2.3	11.4
Artificial Knee joint	19.8	5.0	17.4	8.3	47.1	9.1	17.4
Artificial hip joint	18.8	4.5	16.5	7.5	47.4	8.3	15.0
Spinal implant	21.7	5.7	19.8	9.4	48.1	10.4	17.9
Bone plate	16.1	5.2	14.2	9.0	44.5	6.5	13.5
Intraocular lens	23.6	18.2	21.8	21.8	45.5	3.6	20.0
Heart lung machine	25.3	8.8	20.9	20.9	35.2	11.0	38.5
Device for surgical blood salvage	17.1	5.7	20.0	18.1	30.5	10.5	33.3
Pacemaker	12.4	4.8	13.8	14.5	23.4	11.7	10.3

Results (3)

Dendrogram using Average Linkage (Between Groups)



Clustering by the pattern of optional services by Wholesalers

Examples of optional service patterns

- Total optional services provided (24h/7d support, on-site support, transaction of slips, samples, taking off of overdue products, etc)
 - PTCA balloon catheter, Coronary stent, PTA balloon catheter, etc
- On site support + transaction of slips
 - Artificial Knee joint, Artificial hip joint, Spinal implant, Bone plate
- Support for in-house logistic services
 - Intraocular lens

On site support

- PTCA balloon catheter, Coronary Stent
 - More frequently for the facilities with fewer cases
- Orthopedic devices
 - In most of the cases

One possible explanation

In the case of the surgery using orthopedic devices, such as artificial joints and bone plate, assistants (usually nurses) need in-depth knowledge about products. However, it is very difficult to have such skilled nurses for orthopedic surgery. Thus on-site support by wholesaler's staff or maker's staff is indispensable. This situation might increase the cost of orthopedic devices, but no cost data.

Results (6)

Percentage of wholesales analyzing logistic cost (N=267)

	N	%
Total logistic cost available	92	34.5
Partial logistic cost available	99	37.1
No data	75	28.1
No response	1	0.4
Total	267	100.0

Note: Logistic costs do not always include the costs of optional services.

Conclusion

- The Japanese wholesalers offer various kinds of optional services
- These services might increase the price of medical devices. However, very little wholesalers know the cost of such services.
- Use of the ABC type cost analysis is necessary to establish a sound basis of discussion for pricing of medical devices.

Appendix

- Brief explanation of the Japanese casemix system, DPC

Japan Casemix Project

DPC research team (since 2001)

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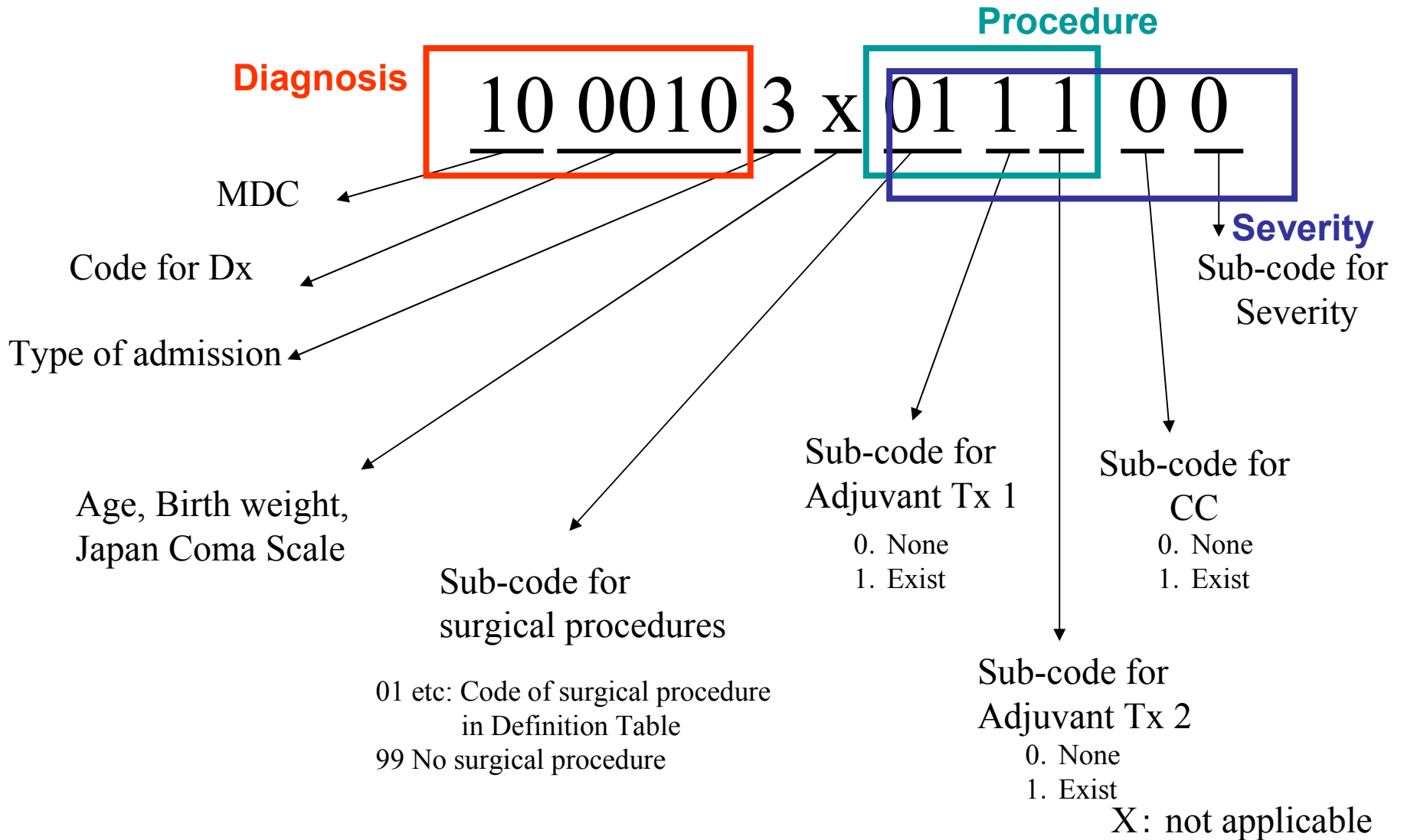
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Purpose of DPC project

1. To standardize the medical information based on already existed IT devices for FFS payment.
2. To share financial risk between payers and providers
3. To provide financial incentives for providers to deliver care efficiently
4. To create competition among providers based on standardized information concerning outcomes
5. To improve the transparency of health services
 - i. Quality of clinical services
 - ii. Quality of hospital management
 - iii. Quality of health policy

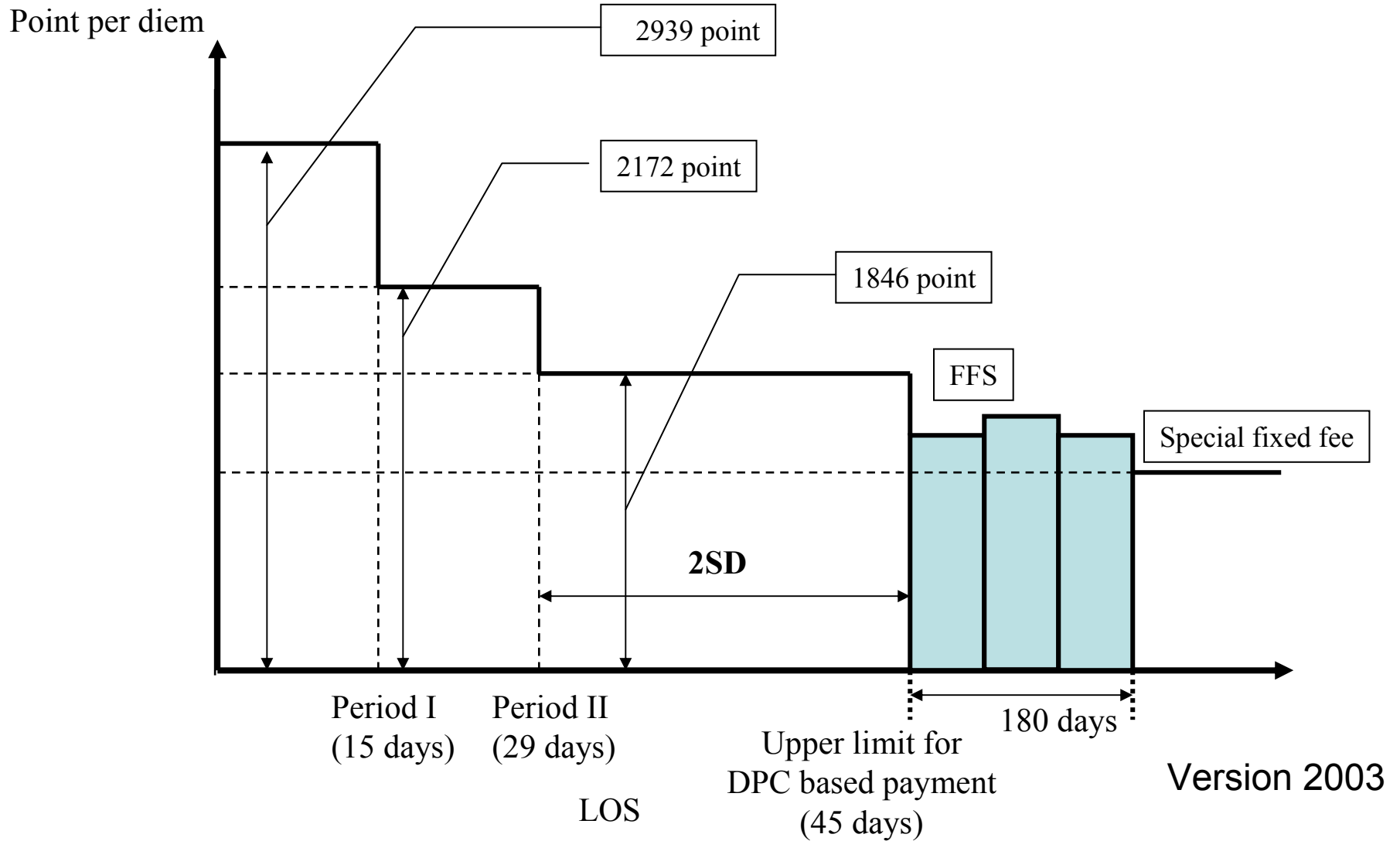
Structure of code of DPC



All patients can be classified into one of 2500 classification

An example of DPC based payment for hospital

DPC 0600203x01000x (Malignancy, Stomach, Total gastrectomy, No additional procedure, No CC)

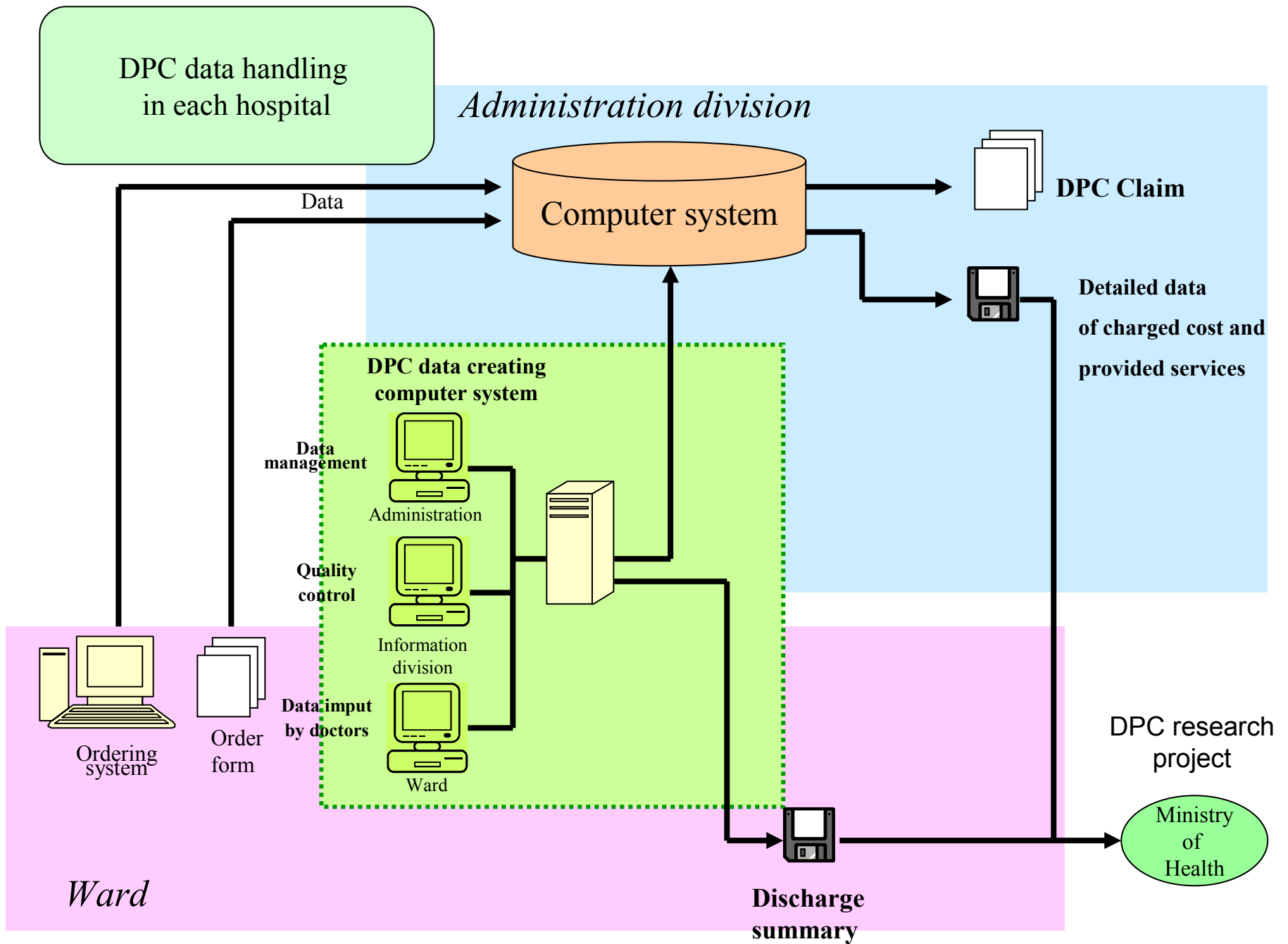


Version 2003

An example of DPC based payment

DPC 0600203x01000x (Malignancy, Stomach, Total gastrectomy, No additional procedure, No CC)							
			per diem payment				
	Period I:	<15	2939 points				
	Period II:	15=<, 29>	2172 points				
	Upper limit:	29=<	1846 points			1 point = ¥10	
Length of Stay: 30 days							
Hospital coefficient of this facility = 1.0507							
DPC component							
	(2939*14+2172*14+1846*2)*1.0507			=79061 points			
FFS components				=76169 points			

Surgical procedures and expensive devices are paid by FFS.



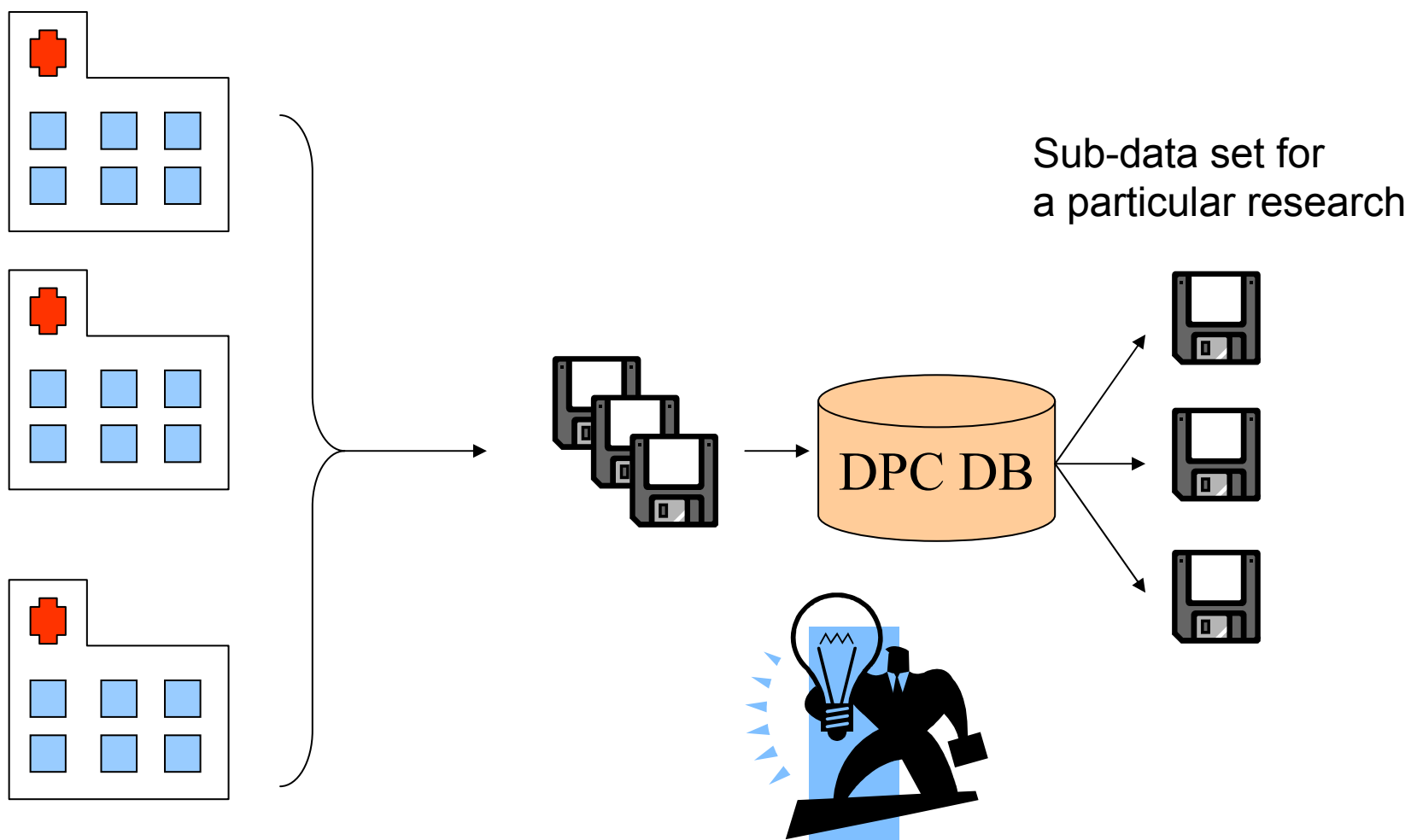
Characteristics of DPC

- DPC is a diagnosis dominant classification.
- Flexibility of grouping:
 - DPC6 as a classification by diagnosis
 - DPC14 as a classification for payment
 - The most detailed classification based on definition table (Clinical classification)
- Coverage from ambulatory services to in-patient services
- Various types of clinical information
 - NYHA score, Barthel Index, Cancer Staging, Burn index, AIS, etc

Current research subjects

- Continuous refinement of classification
 - More acceptable one by clinician and payer
- DPC based clinical study
- DPC based cost study
- DPC based hospital management
- DPC based health planning: DPC based estimation of disease structures
 - National
 - Regional
 - Insurers base (in future)

DPC database as a treasure box for epidemiological and clinical study

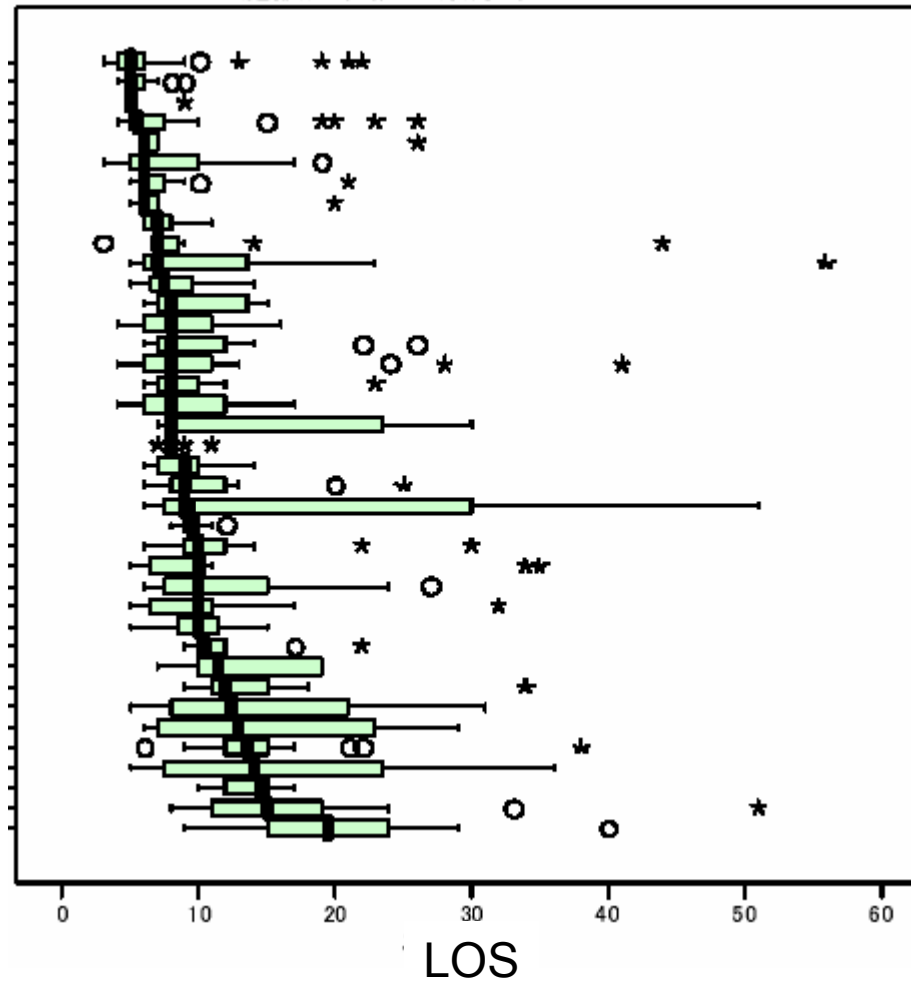


Data from 300,000 beds
which cover more than 80% of acute cases of cancer and ischemic heart diseases

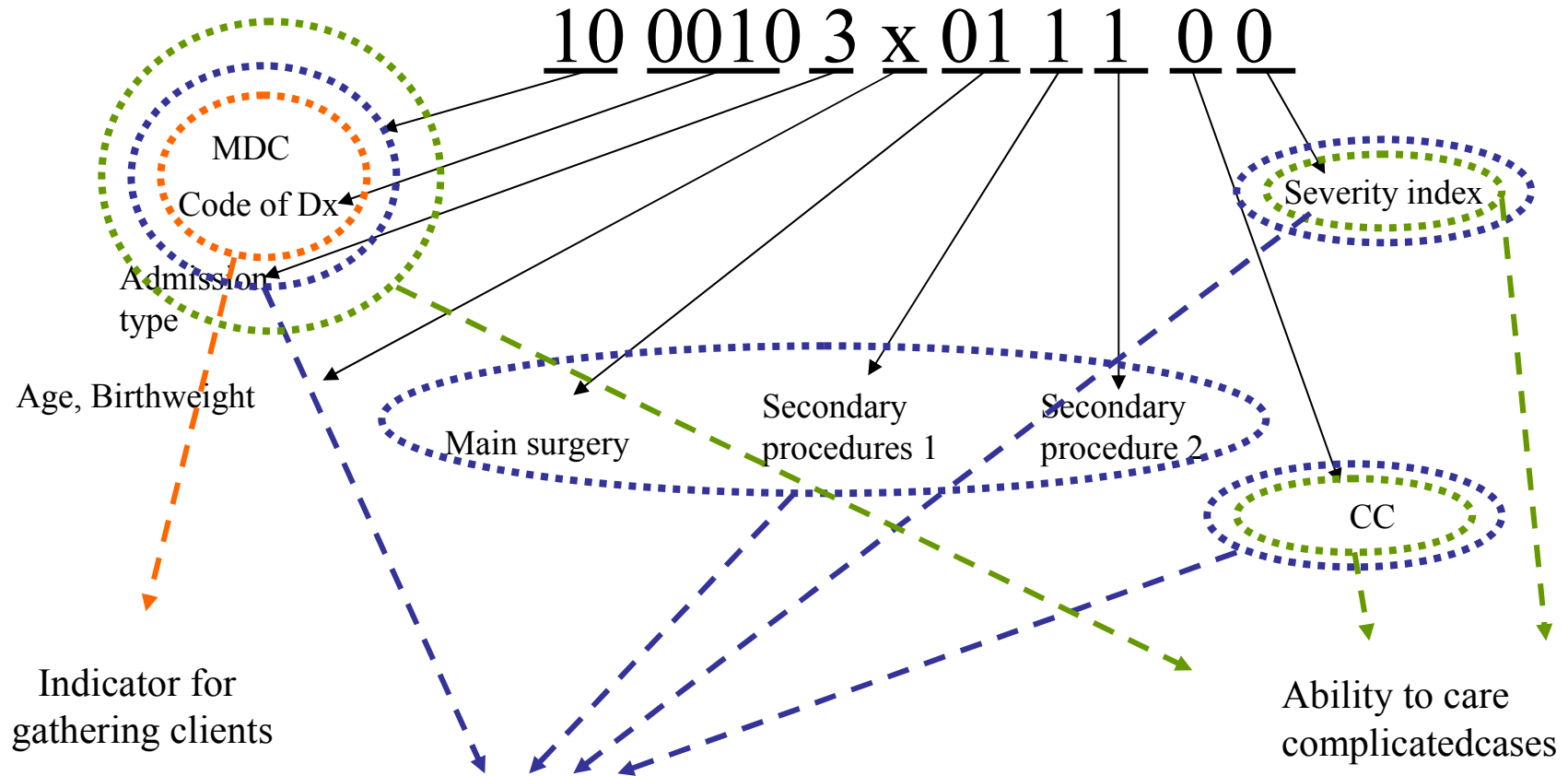
An example of DPC based Bench Marking

Cholelithiasis, Laparoscopic Cholecystectomy, no CC

LOS for each DPC



DPC structure and clinical indicator

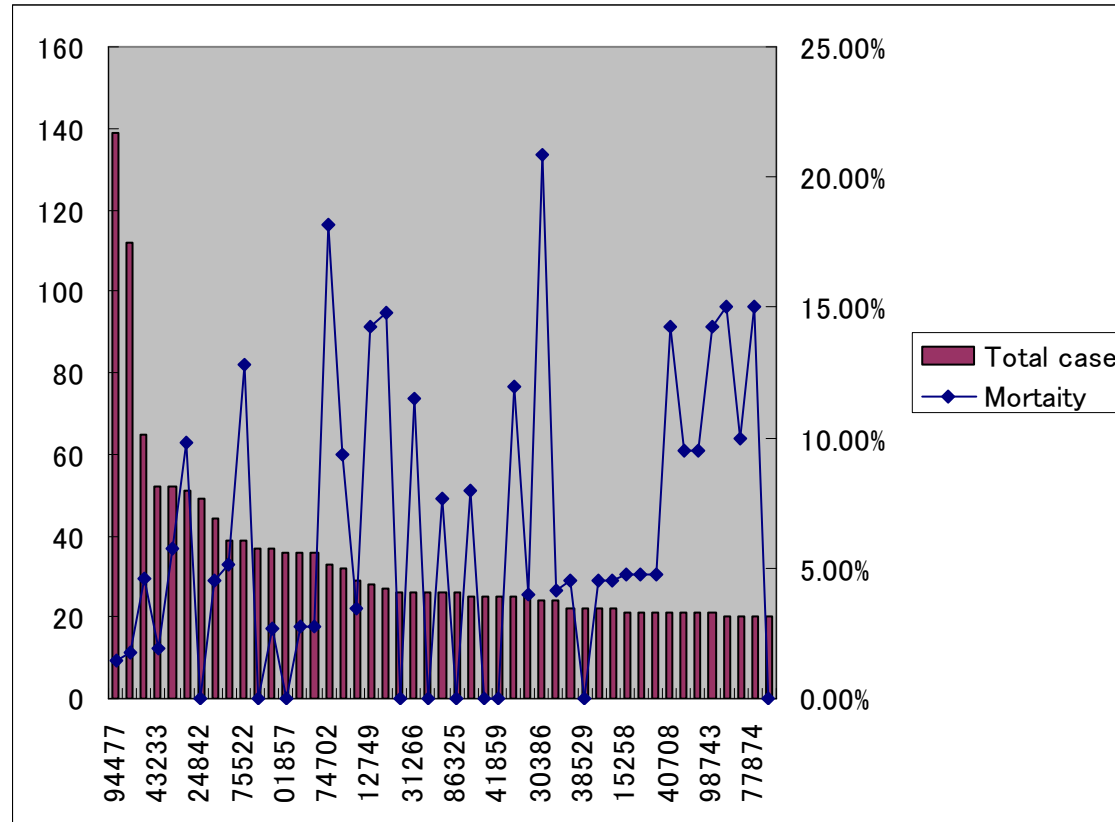


Outcome indicator (Risk adjusted mortality, Post-operation complication rate, Nosocomial infection rate, etc)

Ability to conduct difficult surgical operations

An example of indicator

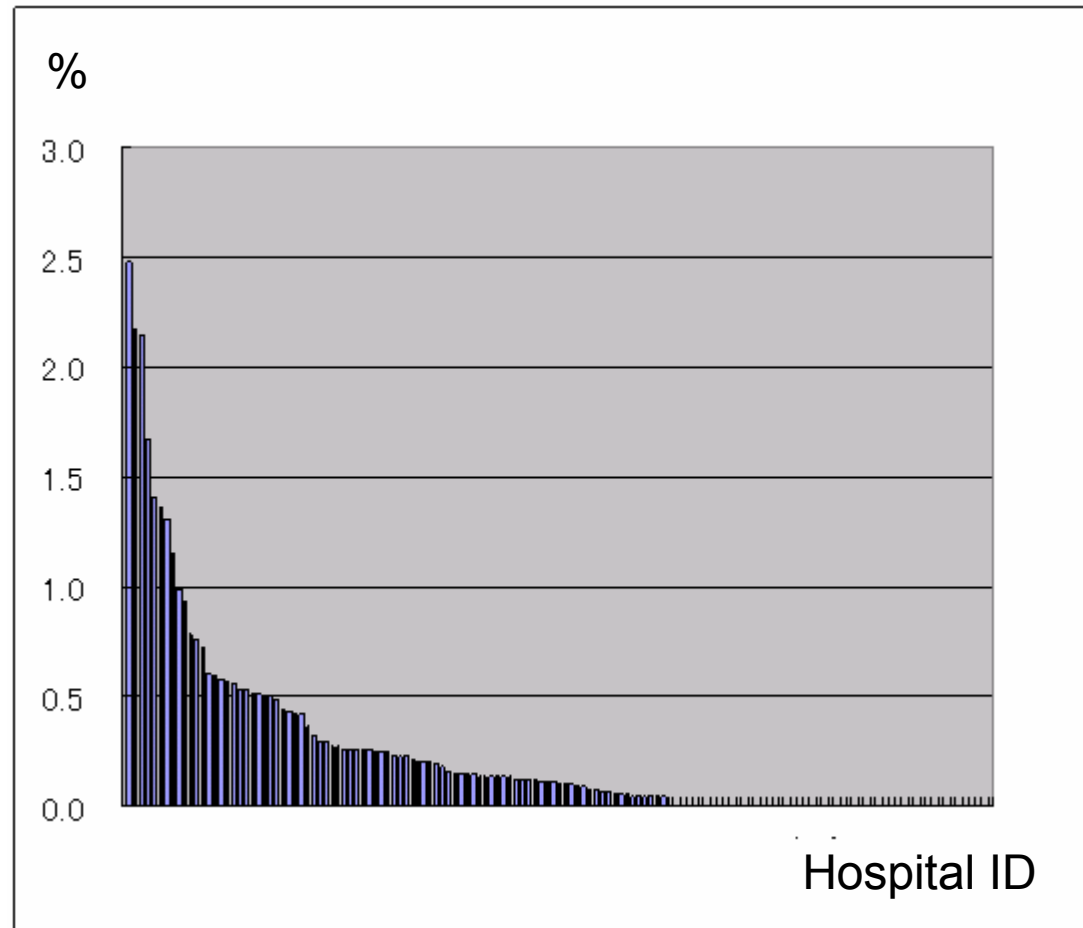
Aneurysm, Surgical operation: Crude mortality



Hospital code

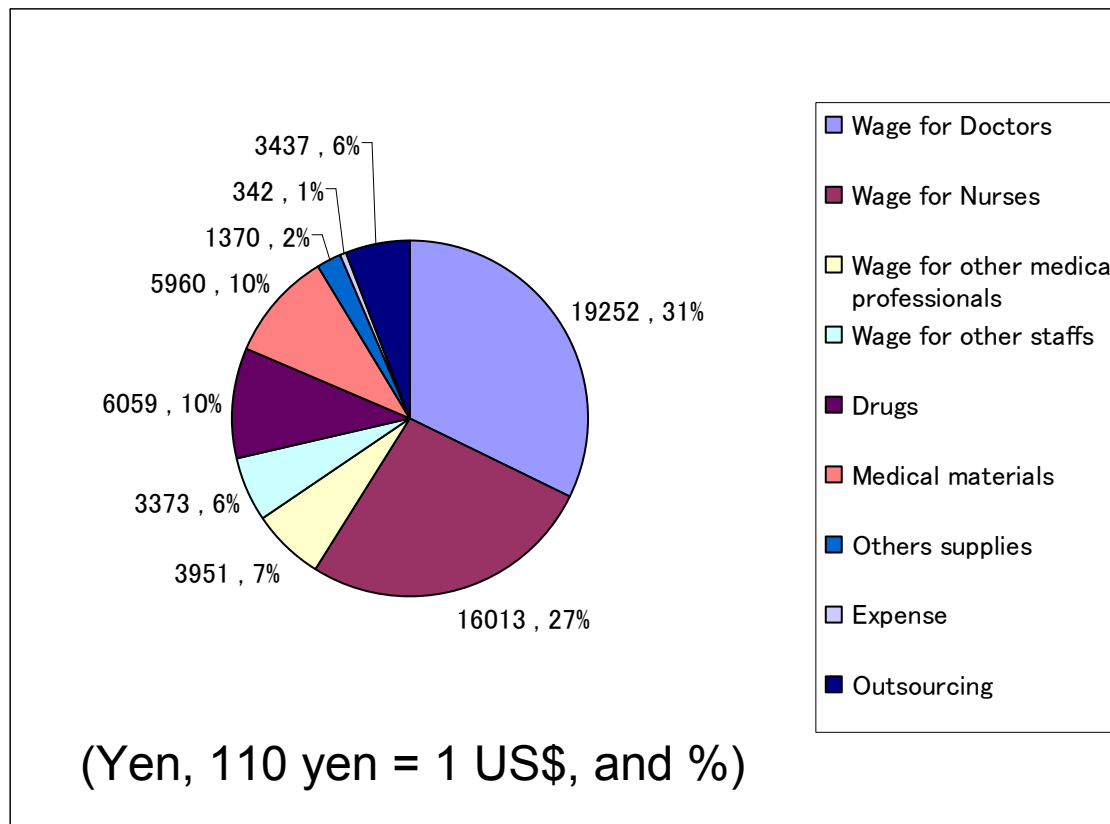
After the adjustment some risk factors, such as admission type, age and CC, the effect of facility has been significantly weakened. (Kuwabara K, *et. al*: 2002)

Prevalence of Post-operative infection (060210 Ileus, surgical)



Appendix: DPC based cost analysis

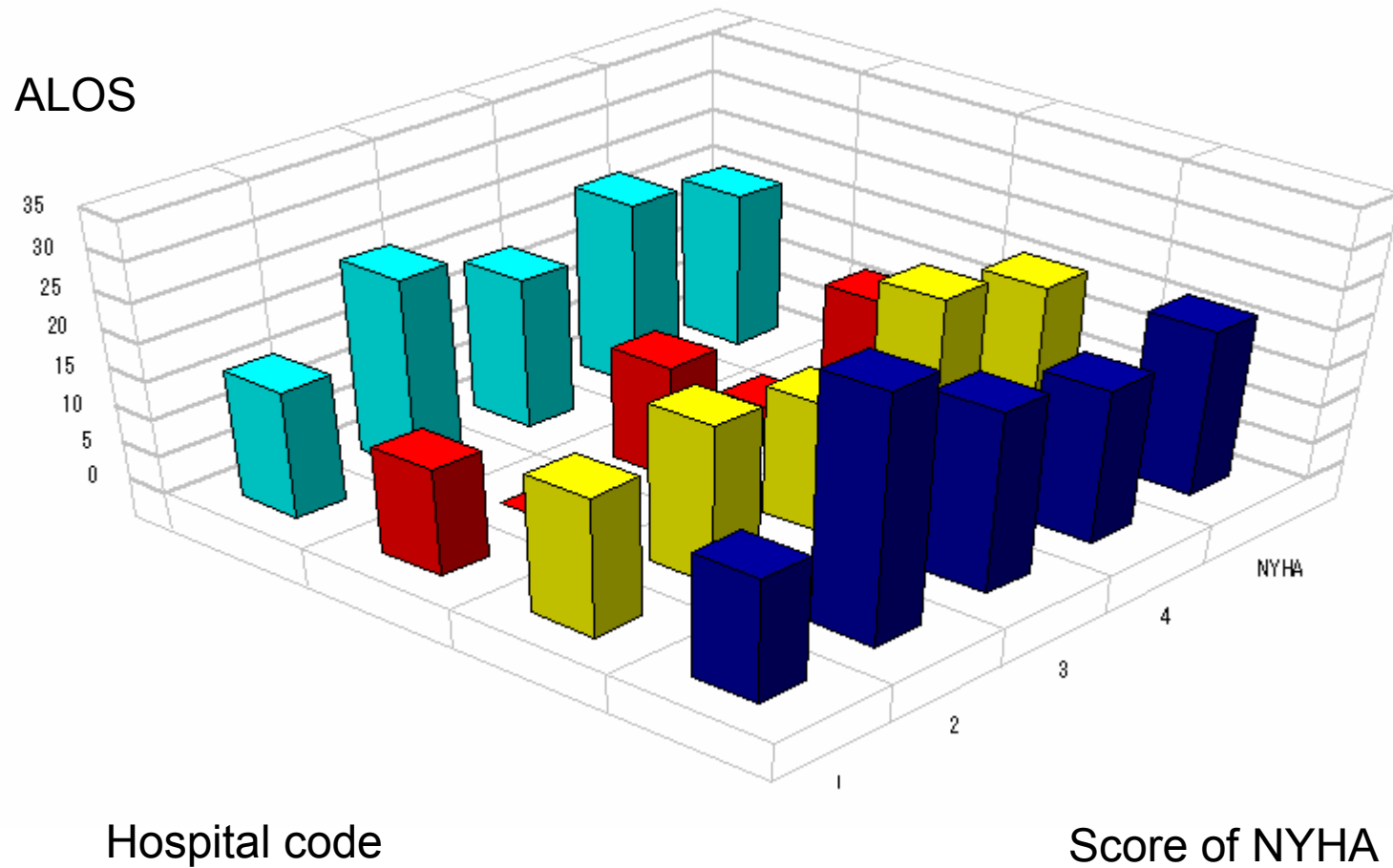
An example of the National cost data (per day basis)
Cholelithiasis, Laparoscopic Cholecystectomy, no CC



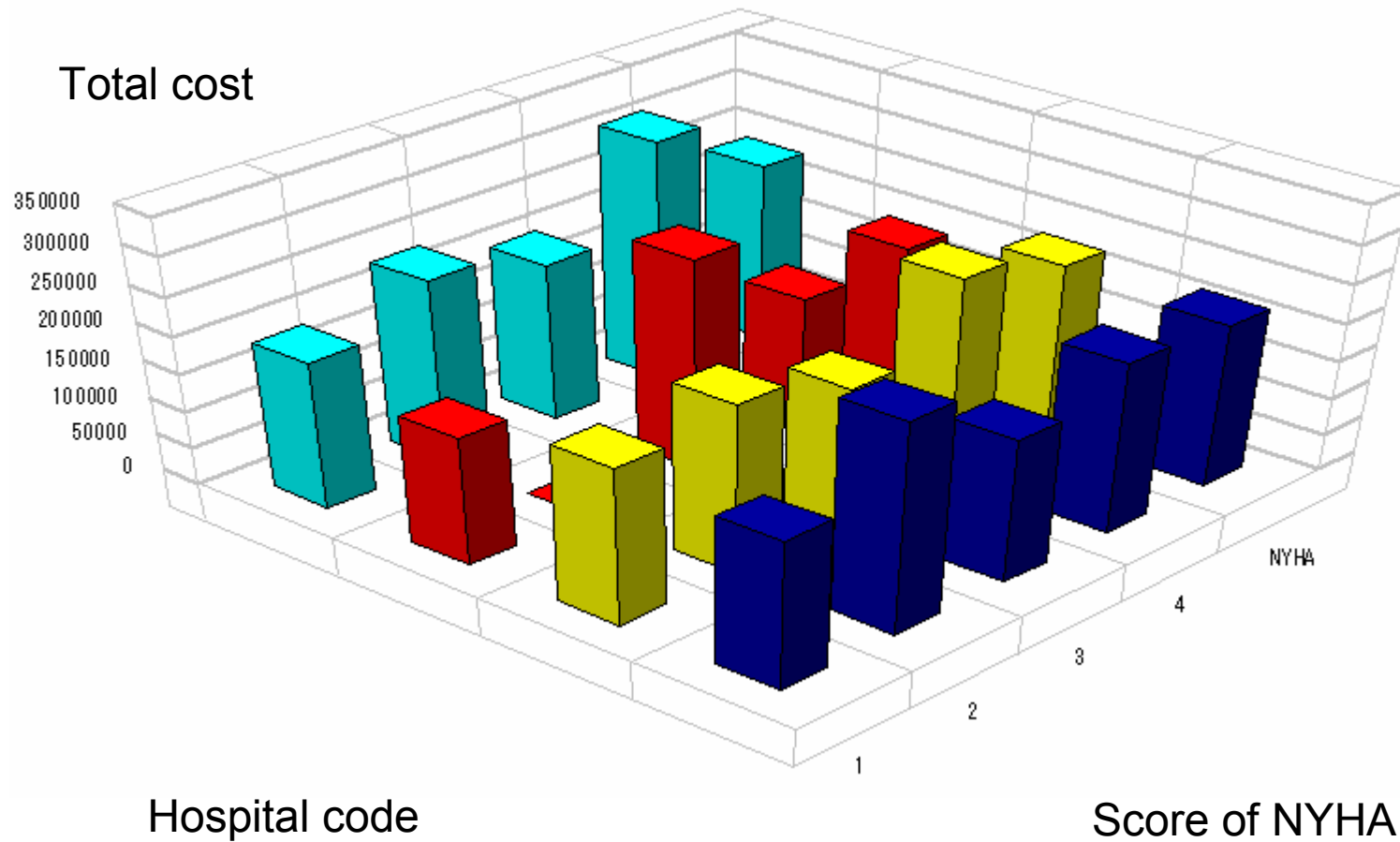
DPC:
Diagnosis Procedure
Combination
The Japanese
Casemix system

By using standardized costing manual and its computer program, each facility can compare its cost-structure for each DPC.

An example of clinical study DPC6 050030, Angina/Chronic IHD, Surgical



An example of clinical study DPC6 050030, Angina/Chronic IHD, Surgical



DPC based estimation of regional disease structure

DPC, Patient survey, Facility survey

DPC definition table

DPC code	ICD-10
050010	1209
...	...

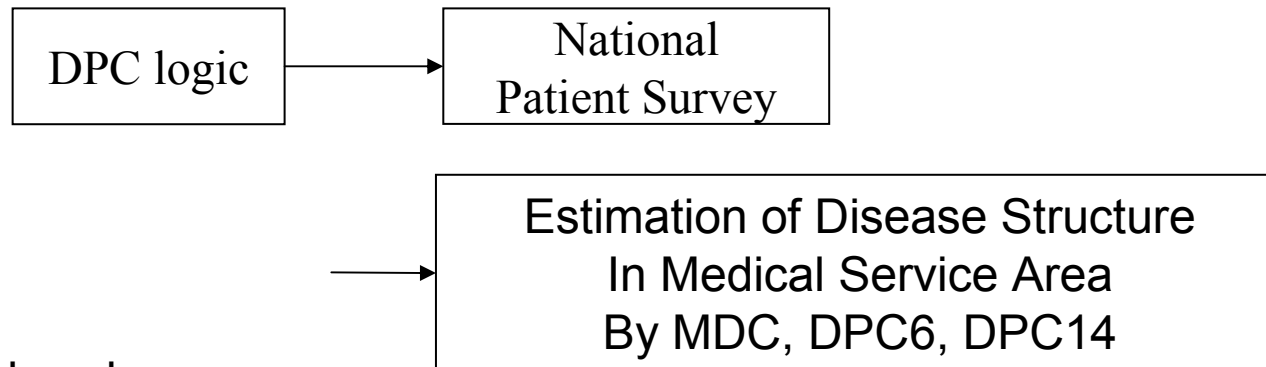
Patient survey

Item	data
Code of facility	0152
Sex	Male
Age	73
Diagnosis ICD10	1209
Operation	no
LOS	17
...	...

Facility survey

Item	data
Code of facility	0152
Owner	国
No. of Beds	154
No. of workers	211
Equipement	
...	...

By applying the DPC logic for the patient survey, we can estimate the disease structure of each MSA

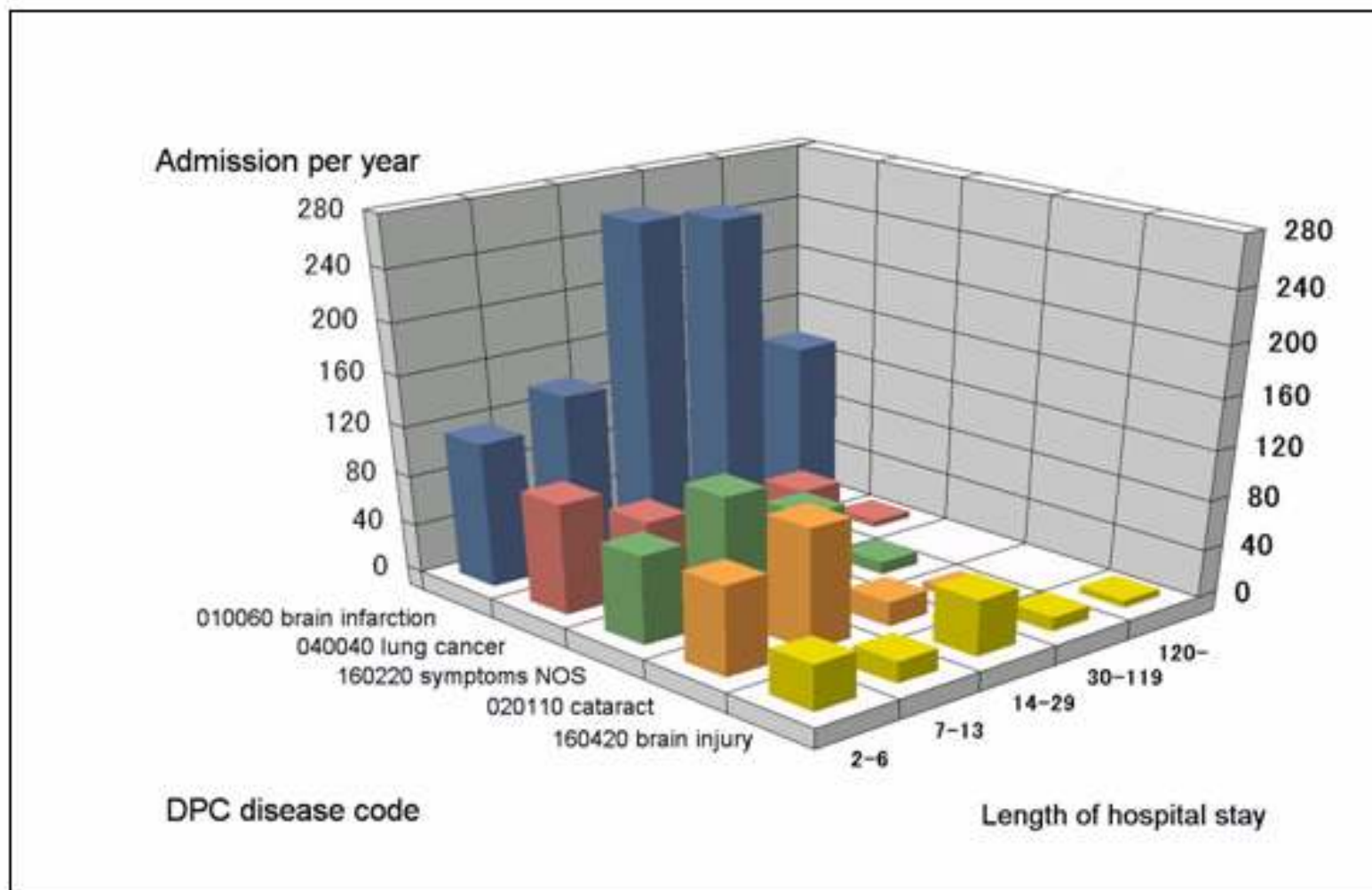


Kitakyushu

DPC6	OPE	Total	LOS <=1	LOS 2-29	LOS 30-119	LOS >=120
010010 Brain Tumor	Yes	51	0	24	22	5
010010 Brain Tumor	No	57	1	35	14	7
010020 SAH	Yes	41	0	19	14	8
010020 SAH	No	38	10	13	11	3
010030 Non-ruptured brain aneurysm	Yes	18	0	14	4	0
010030 Non-ruptured brain aneurysm	No	16	8	8	0	0
010040 Intra-cranial hematoma	Yes	49	2	16	24	8
010040 Intra-cranial hematoma	No	156	11	75	53	17
010060 Cerebro-vascular infarction	Yes	55	0	30	19	4
010060 Cerebro-vascular infarction	No	1,220	32	638	340	203

Source: Fushimi (2004)

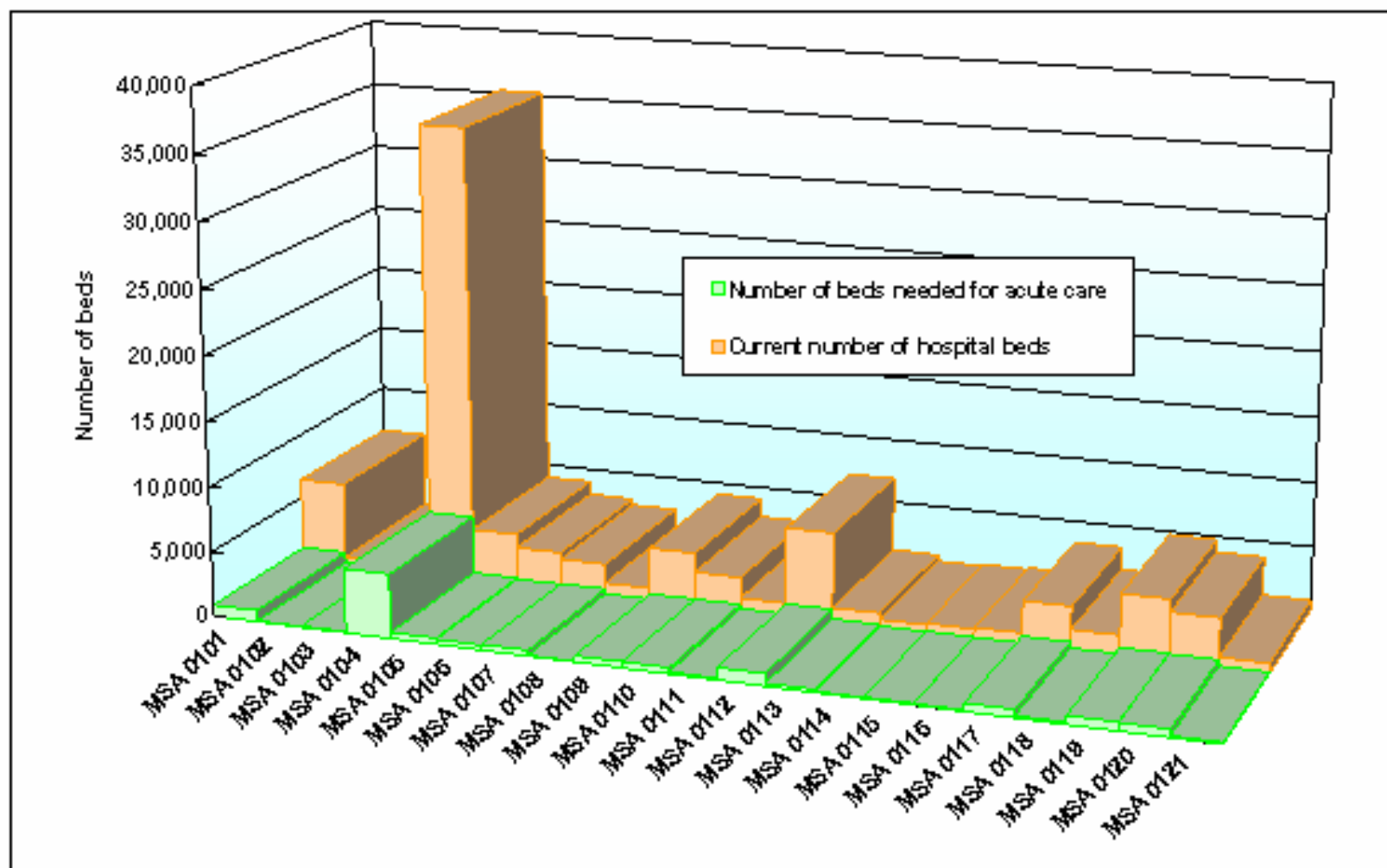
DPC based estimation of disease structure in Tokyo



Source: Fushimi (2004)

DPC based estimation of beds needed for acute care in Hokkaido

Estimation of number of beds needed for acute care↵



Source: Fushimi (2004)