



## CHAPTER 5 RESULTS

This chapter demonstrates results of unit cost of patient services at Khon Kaen Hospital in the fiscal year 1996 (October 1, 1995 to September 30, 1996).

### 1. Total Direct Cost

The total cost of Khon Kaen hospital is 411,086,423 baht. Total direct cost (TDC) of each cost center consist of labor cost (LC), material cost (MC) and capital cost (CC). Proportion of LC:MC:CC is 48:45:7 as shown in chart 5.1.

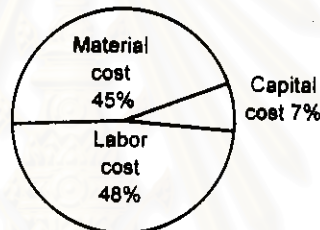


Chart 5.1 Labor cost, material cost and capital cost

NRPCC, PS and NPS have labor cost more than material cost but RPCC has material cost (63.84%) more than labor cost (27.55%), shown in table 5.1. The high material cost of RPCC comes from medicine costs in the pharmacy department. The value of medicine is 84,016,554 baht. It represents 64.45% of material cost of RPCC.

Table 5.1 Cost structure in each cost center

Cost Center	Labor Cost (%)	Material Cost (%)	Capital Cost (%)	Total Direct Cost (%)
NRPCC	50.59	42.01	7.40	100.00
RPCC	27.55	63.84	8.61	100.00
PS	77.09	18.28	4.63	100.00
NPS	71.48	25.89	2.63	100.00
Total	47.89	45.05	7.06	100.00

Proportion of cost of non revenue producing cost centers (NRPCC), revenue producing cost centers (RPCC), patient service (PS) and non patient service (NPS) are 17% , 50% , 32% and 1%, respectively (chart 5.2).

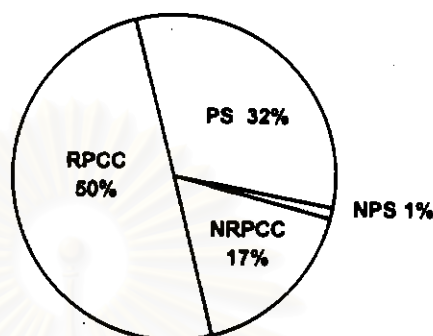


Chart 5.2 Cost percentage of NRPCC, RPCC, PS and NPS of Khon Kaen Hospital in the fiscal year 1996

Considering categories of cost in table 5.2, PS has the highest labor cost (51.59% of total labor cost). RPCC has highest material cost (70.39% of total material cost). RPCC has highest capital cost (60.61% of total capital cost). RPCC has highest total direct cost (49.67% of total direct cost). NPS has the lowest labor cost, material cost, capital cost and total direct cost because it has only 2 cost centers that have a few total direct costs. On the other hand, NRPCC, RPCC and PS have 12, 9 and 30 cost centers , respectively.

Table 5.2 Comparison of labor costs, material costs, capital costs and total direct costs

Cost Center	Labor Cost (%)	Material Cost (%)	Capital Cost (%)	Total Direct Cost (%)
NRPCC	18.02	15.91	17.91	17.06
RPCC	28.57	70.39	60.61	49.67
PS	51.59	13.00	21.03	32.05
NPS	1.82	0.70	0.46	1.22
Total	100.00	100.00	100.00	100.00

### 1.1 Total Direct Cost of NRPCC

The general affairs department has the highest total direct cost in NRPCC. There are 5 routine works under this department : (a)document and general affairs, (b) personnel, (c)guard and safety, (d)vehicle and (e)lawn and gardening. This department must be responsible for all departments and all personnel in the hospital. The high total direct cost of the general affairs department comes from material costs. The high expenditure under material costs comes from all public utility costs of all departments.

Table 5.3 Total direct cost of non-revenue producing cost centers

code	department	TDC	
		(baht)	(%)
A01	General affairs	28,024,335	39.96
A02	Nurse administration	7,201,143	10.27
A03	Financial and accounting	3,066,685	4.37
A04	Supply	3,082,582	4.39
A05	maintenance	3,972,728	5.66
A06	Laundry	4,891,138	6.97
A07	Academic	4,104,608	5.85
A08	Med. illustration and audio-visual tech.	1,025,683	1.46
A09	Medical records and statistics	4,424,792	6.31
A10	Central supply	6,601,668	9.41
A11	Respiratory center	1,521,647	2.17
A12	Health insurance office	2,222,143	3.17
	total of NRPCC	70,139,151	100.00

### 1.2 Total Direct Cost of RPCC

From table 5.4 , Pharmacy department has the highest total direct cost of RPCC (47.57%). The high cost of the pharmacy department comes from material cost and almost of the material cost is medicine. The second and third highest total direct cost are operating room and clinical laboratory (20.09% and 10.70%, respectively). Khon Kaen hospital is a tertiary care hospital in Khon Kaen province therefore the cost of the operating room is high. The great majority of direct cost of the clinical laboratory is material cost which is for chemical solutions used in laboratories.

Table 5.4 Total direct cost of revenue producing cost centers

code	department	TDC	
		(baht)	(%)
B01	Clinical pathology	3,581,626	1.75
B02	Clinical laboratory	21,854,029	10.70
B03	Radiology	11,497,705	5.63
B04	Rehabilitation	3,687,537	1.81
B05	Pharmacy	97,123,045	47.57
B06	Operating room	41,018,300	20.09
B07	Nutrition	12,014,047	5.88
B08	Delivery room	4,576,932	2.24
B09	Anaestheology	8,827,735	4.32
	total of RPCC	204,180,956	100.00

### 1.3 Total Direct Cost of PS

Three departments of patient service departments that have the highest total direct cost are emergency and forensic, medical ward for females and private section ward (9.89, 7.58 and 7.06 million baht, respectively). Data is shown in appendix iii. The majority of total direct cost of the emergency and forensic is labor cost. Its labor cost is very high (8.75 million baht) because labor cost of transfer unit is attached in this department. The transfer unit has a greater number of permanent employees than temporary employees. Another reason is that all physicians are required to work at this department.

### 1.4 Total Direct Cost of NPS

Total direct costs of the social medicine department and the health education and public relation department are 3,858,586 baht and 1,161,451 baht, respectively.



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## 2. Allocation Criteria

Allocation criteria in this study and the absorbing cost centers which received the highest allocation from transient cost centers are shown in table 5.5.

Table 5.5 Allocation criteria of transient cost center

code	Transient cost center	allocation criteria	absorbing cost center received highest allocation	% of allocation
A01	General affairs	Number of personnel	Operating room	6.48
A02	Nurse administration	Number of personnel in nursing department	Operating room	10.02
A03	Finance & accounting	Quantity of purchasing	Pharmacy	38.97
A04	Supply	Quantity of purchasing	Pharmacy	42.32
A05	Maintenance	Maintenance expense	General affairs	34.11
A06	Laundry	Weight of cloth	IPD - male medical ward	8.35
A07	Academic	Number of personnel	Operating room	6.21
A08	Medical illustration and Audio-visual technology	Quantity of request work	OPD - dental service	13.96
A09	Medical records and statistics	Number of patients	OPD - GP service	19.34
A10	Central supply	Quantity of supply	IPD - traumatic ward no.1	12.33
A11	Respiratory center	Quantity of work	Traumatic ICU	15.89

A12	Health insurance office	Number of patients	OPD - GP service	19.34
B01	Clinical pathology	Service charge	OPD - surgical service	10.20
B02	Clinical laboratory	Service charge	IPD - male medical ward	14.64
B03	Radiology	Service charge	IPD - male medical ward	13.28
B04	Rehabilitation	Service charge	OPD - orthopedic service	24.90
B05	Pharmacy	Drug expense	IPD - female medical ward	14.72
B06	Operating room	Service charge	IPD - uro-surgical ward	29.34
B07	Nutrition	Length of stay except ICU	IPD - male medical ward	12.39
B08	Delivery room	Obstetrics ward	IPD - obstetric ward	100.00
B09	Anaesthesiology	Service charge	IPD - female surgery ward	14.58

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### 3. Full Cost of Patient Service Areas

After the allocated cost of transient cost centers to absorbing cost centers, the full cost of patient service areas can be determined by the total direct cost plus the total indirect cost, as shown in table 5.6 and 5.7.

Table 5.6 Full cost of out-patient service areas

code	department	TDC	IDC	full cost
C01	OPD-medical service	2,868,801	12,978,170	15,846,971
C02	OPD-surgical service	2,080,834	5,969,043	8,049,877
C03	OPD-orthopedic service	1,532,098	2,972,620	4,504,719
C04	OPD-obstetric & gynecology service	2,840,885	2,416,517	5,257,401
C05	OPD-ophthalmological service	1,548,263	1,980,363	3,528,626
C06	OPD-ENT service	1,175,048	1,449,069	2,624,117
C07	OPD-pediatric service	2,166,793	2,617,875	4,784,668
C08	OPD-GP service	2,265,244	10,625,008	12,890,252
C09	OPD-dental service	5,974,856	2,519,495	8,494,352
C10	Emergency and forensic service	9,887,455	6,442,496	16,329,951

(unit : Thai baht)

Table 5.6, the first three highest indirect cost of out-patient service areas are medical, general practice (GP) and emergency and forensic service (12.98, 10.62 and 6.44 million baht, respectively). Major indirect cost of medical service and GP service comes from the pharmacy department (9.94 and 5.63 million baht, respectively). Major indirect cost of emergency and forensic service comes from the general affairs department (1.40 million baht). But the first three highest full cost are emergency and forensic service, medical service and GP service (16.33, 15.85 and 12.89 million baht).



Table 5.7 Full cost of in-patient service areas

code	department	TDC	IDC	full cost
C11	IPD-female medical ward	7,576,157	23,243,761	30,819,918
C12	IPD-male medical ward	6,927,392	21,963,648	28,891,040
C13	IPD-female surgical ward	5,003,463	16,668,407	21,671,869
C14	IPD-male surgical ward	5,018,178	16,988,470	22,006,648
C15	IPD-traumatic ward no.1	5,157,987	11,244,813	16,402,801
C16	IPD-traumatic ward no.2	5,262,034	11,502,670	16,764,704
C17	IPD-uro-surgical ward	5,439,000	23,478,824	28,917,824
C18	IPD-EENT ward	4,240,158	11,543,027	15,783,185
C19	IPD-obstetric ward	2,622,470	14,226,779	16,849,249
C20	IPD-gynecological ward	3,546,423	5,455,902	9,002,325
C21	IPD-male orthopedic ward no.1	4,466,841	8,565,310	13,032,151
C22	IPD-male orthopedic ward no.2	3,758,926	7,697,028	11,455,953
C23	IPD-female orthopedic ward	3,890,689	7,212,414	11,103,103
C24	IPD-pediatric ward no.1 (0-8 mos.)	5,896,067	6,939,401	12,835,467
C25	IPD-pediatric ward no.2 (8 mos.-14 yrs.)	5,348,295	9,020,486	14,368,781
C26	IPD-pediatric ward no.3 (chronic disease)	2,670,016	4,302,890	6,972,906
C27	Private section ward	7,058,897	6,697,725	13,756,621
C28	Medical ICU	5,267,656	5,116,485	10,384,141
C29	Traumatic ICU	4,247,435	6,233,082	10,480,516
C30	Surgical ICU	6,007,916	5,372,494	11,380,410

(unit : Thai baht)

From table 5.7, the first three highest indirect cost of in-patient service areas are uro-surgical ward, medical ward for females and males (23.48, 23.24 and 21.96 million baht, respectively). The major indirect cost of uro-surgical ward comes from the operating room. The major indirect cost of the medical ward for females and males comes from the pharmacy department. On the other hand, the first three highest full costs are medical

ward for females, uro-surgical ward and medical ward for males (30.82, 28.92 and 28.89 million baht).

#### 4. Unit cost

The unit cost of patient service areas is divided into 2 groups: out-patient and in-patient service shown in table 5.8 and 5.9 respectively.

Table 5.8 Unit cost of out-patient service areas

code	patient service areas	full cost (baht)	patient (visit)	unit cost (baht/visit)
C01	OPD-medical service	15,846,971	41,550	381
C02	OPD-surgical service	8,049,877	36,726	219
C03	OPD-orthopedic service	4,504,719	11,885	379
C04	OPD-ob. & gyn. service	5,257,401	38,794	136
C05	OPD-ophthalmological service	3,528,626	18,675	189
C06	OPD-ENT service	2,624,117	10,808	243
C07	OPD-pediatric service	4,784,668	28,427	168
C08	OPD-GP service	12,890,252	84,899	152
C09	OPD-dental service	8,494,352	15,947	533
C10	Emergency and forensic service	16,329,951	60,960	268
	Total of out-patient service areas	82,310,934	348,671	236

(unit : Thai baht)

Full cost of out patient service areas is 82.31 million baht and patients made 348,671 visits for this areas so that the unit cost of out-patient service areas is 236 baht/visit. The full cost of dental service is 8.49 million baht but there are only 15,947 visits for dental treatment therefore dental service has the highest unit cost of 533 baht/visit. The full cost of obstetric and gynecological service is only 5.26 million baht and number of times of patients visit this service are 38,794 so the obstetric and gynecological service has the lowest unit cost, 136 baht/visit.

Table 5.9 Unit cost of in-patient service areas

code	in-patient service areas	full cost (baht)	length of stay (day)	unit cost (baht/day)
C11	IPD-female medical ward	30,819,918	15,170	2,032
C12	IPD-male medical ward	28,891,040	26,401	1,094
C13	IPD-female surgical ward	21,671,869	19,528	1,110
C14	IPD-male surgical ward	22,006,648	16,136	1,364
C15	IPD-traumatic ward no.1	16,402,801	11,535	1,422
C16	IPD-traumatic ward no.2	16,764,704	9,988	1,678
C17	IPD-urosurgical ward	28,917,824	27,731	1,043
C18	IPD-EENT ward	15,783,185	10,380	1,521
C19	IPD-obstetric ward	16,849,249	6,928	2,432
C20	IPD-gynecological ward	9,002,325	12,484	721
C21	IPD-male orthopedic ward no.1	13,032,151	14,357	908
C22	IPD-male orthopedic ward no.2	11,455,953	13,235	866
C23	IPD-female orthopedic ward	11,103,103	14,701	755
C24	IPD-ped. ward (0-8 mos.)	12,835,467	15,873	809
C25	IPD-ped. ward (8 mos.-14 yrs.)	14,368,781	15,283	940
C26	IPD-ped. Ward (chronic disease)	6,972,906	9,571	729
C27	Private section ward	13,756,621	12,958	1,062
C28	Medical ICU	10,384,141	2,915	3,562
C29	Traumatic ICU	10,480,516	2,451	4,276
C30	Surgical ICU	11,380,410	2,411	4,720
	Total of in-patient service areas	322,879,612	260,036	1,242

(unit : Thai baht)

From table 5.9, the full cost of in-patient service areas is 322.88 million baht and total length of stay of in-patient is 260,036 days so that the unit cost of in-patient service areas is 1,242 baht/day. Considering all in-patient service areas, the gynecological ward has the lowest unit cost (721 baht/day). Surgical ICU has the highest unit cost (4,720 baht /day). Considering in-patient service areas, except the intensive care unit, the obstetric ward has the highest unit cost (2,432 baht/day), because it includes the full cost of delivery room. The unit cost of obstetric ward, excluded the full cost of delivery room, is 1,382 baht/day. Considering in-patient service areas, except the intensive care unit and excluding the full cost of the delivery room, the medical ward for females has the highest unit cost (2,032 baht/day).



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