



Management analysis for patient safety using GS1 standard codes



7.Oct. 09'Global GS1 Healthcare Conference Hong Kong

Kyoto Second Red Cross Hospital

Kiyohito Tanaka

Practical use GS1 code in the hospital

- Out line of K2RCH
- Strict Data storage for strict medicine usage and outcome
 - Routine injection and infusion on the ward
 - For Out patient
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- Strict data storage for medical instruments and devices and outcome
 - Routine distribution
 - Operation room
 - Endoscopic center (reprocessing of endoscopy)

The Outline of K2RCH

- 640 Beds (including ICU and NICU)

- Acute care hospital which incorporates a critical care center.

The numbers of emergency operations and nighttime operations are increasing year by year due to the recent medical environment in Japan.

6000 ambulance car/Year

- Department

Wards · · · 13 Out Patient 1800/day OR · 11rooms

Cardio Vascular IVR : 1348, Brain IVR : 245, Abdominal IVR : 383

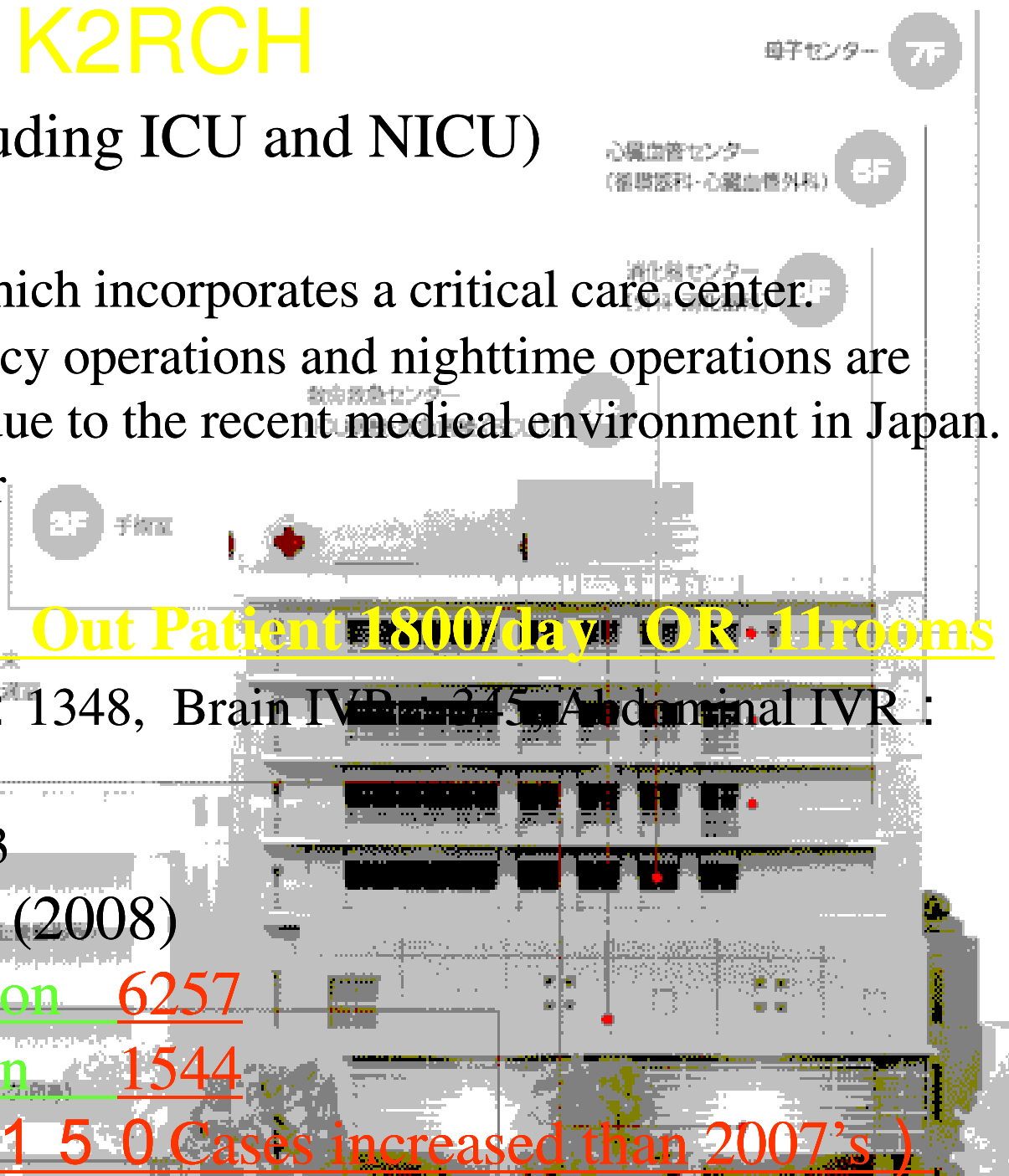
GI endoscopy : 14563

- Surgical Operation (2008)

Number of Operation 6257

Emergent Operation 1544

(150 Cases increased than 2007's)



Routine folw of injection and infusion

Checking prescription



Confirmation of mixed injections

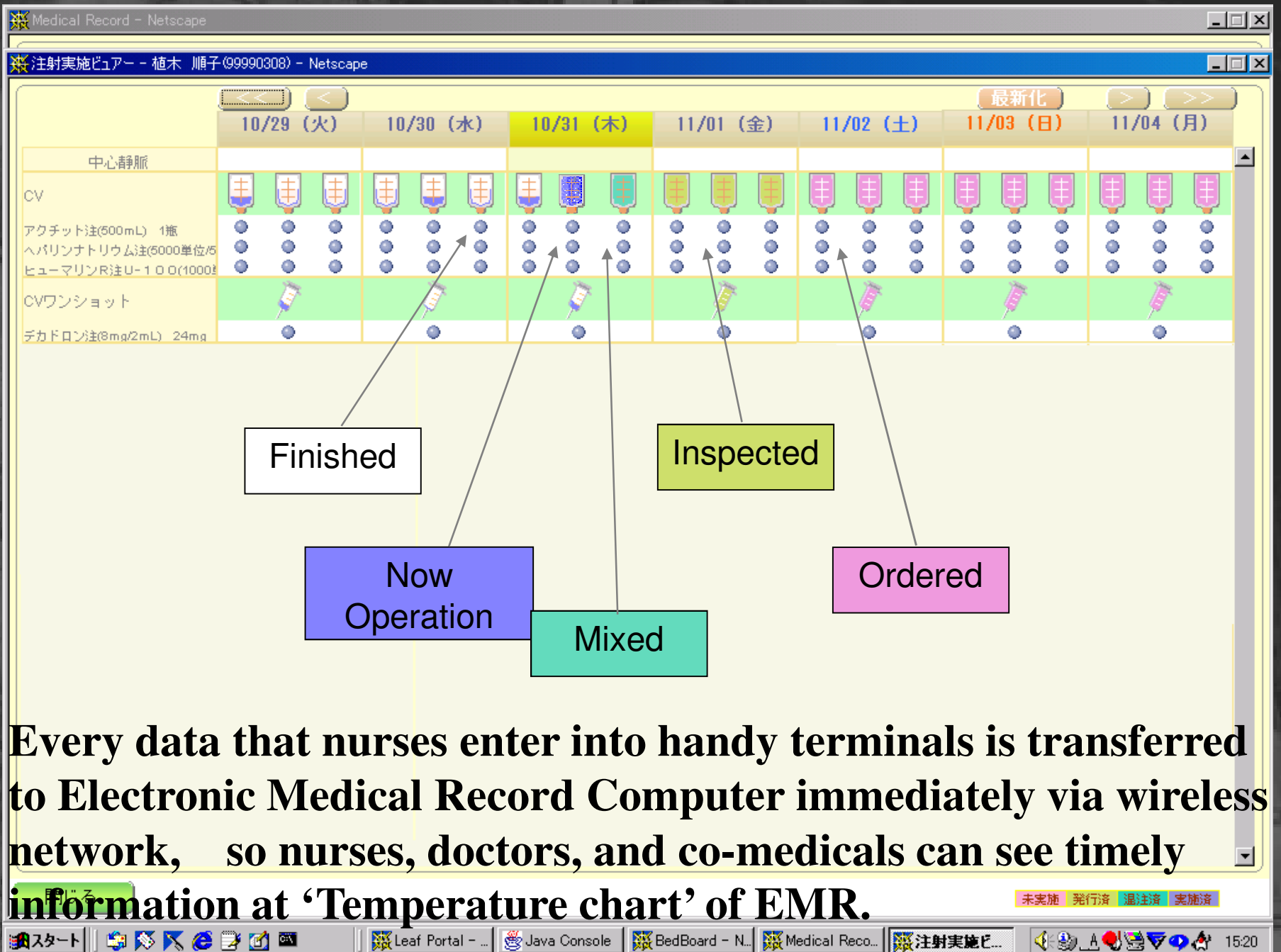


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At hospital wards, nurses check the medications if they are correct, and they mix the medications according to the required time, and the usage. When nurses mix the medications, they use handy terminals or bar code readers to confirm the information on the prescriptions and the ravel of the injections and the infusions.



GS1 code not useful for drip infusion,
Because GS1 code is coding the individual materials,
But in practical use , mixing is necessary.

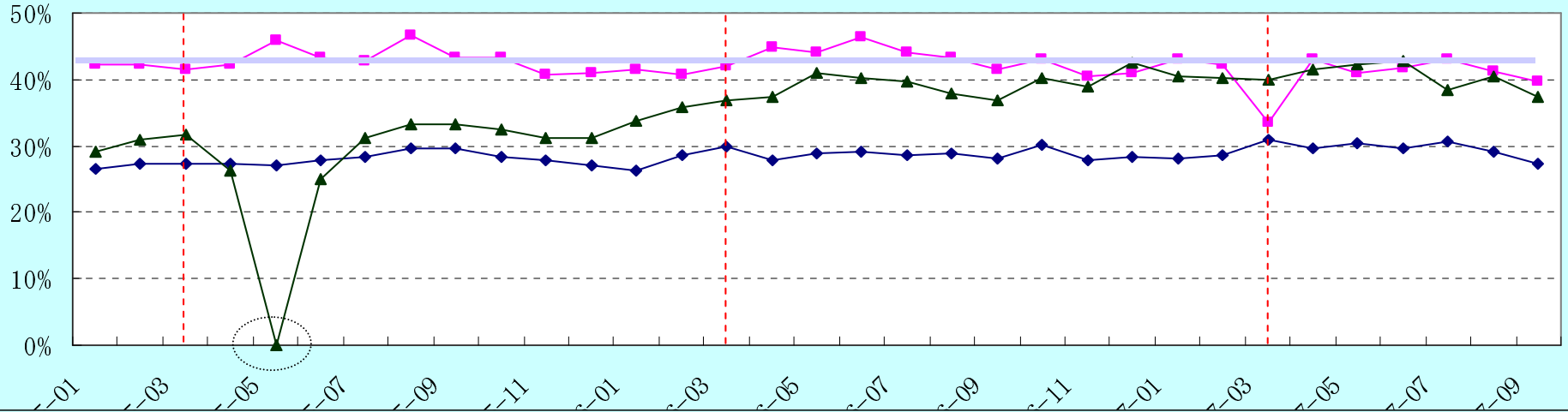


Every data that nurses enter into handy terminals is transferred to Electronic Medical Record Computer immediately via wireless network, so nurses, doctors, and co-medicals can see timely information at 'Temperature chart' of EMR.

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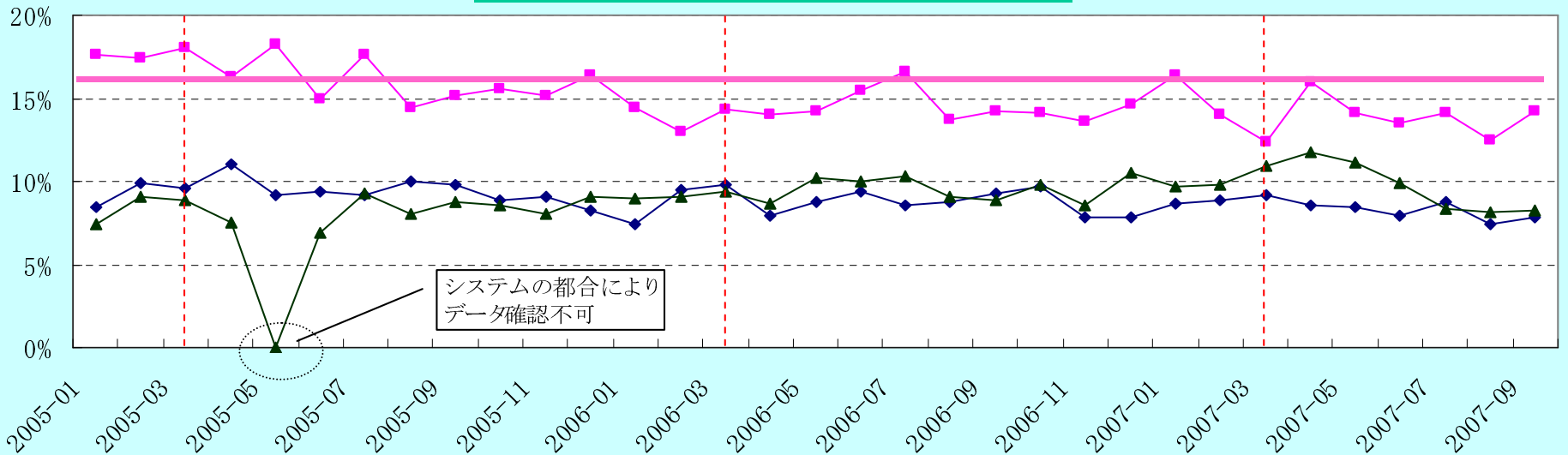
Ratio of additional order and changing order

Ave. 43.2



Ratio of canceling order

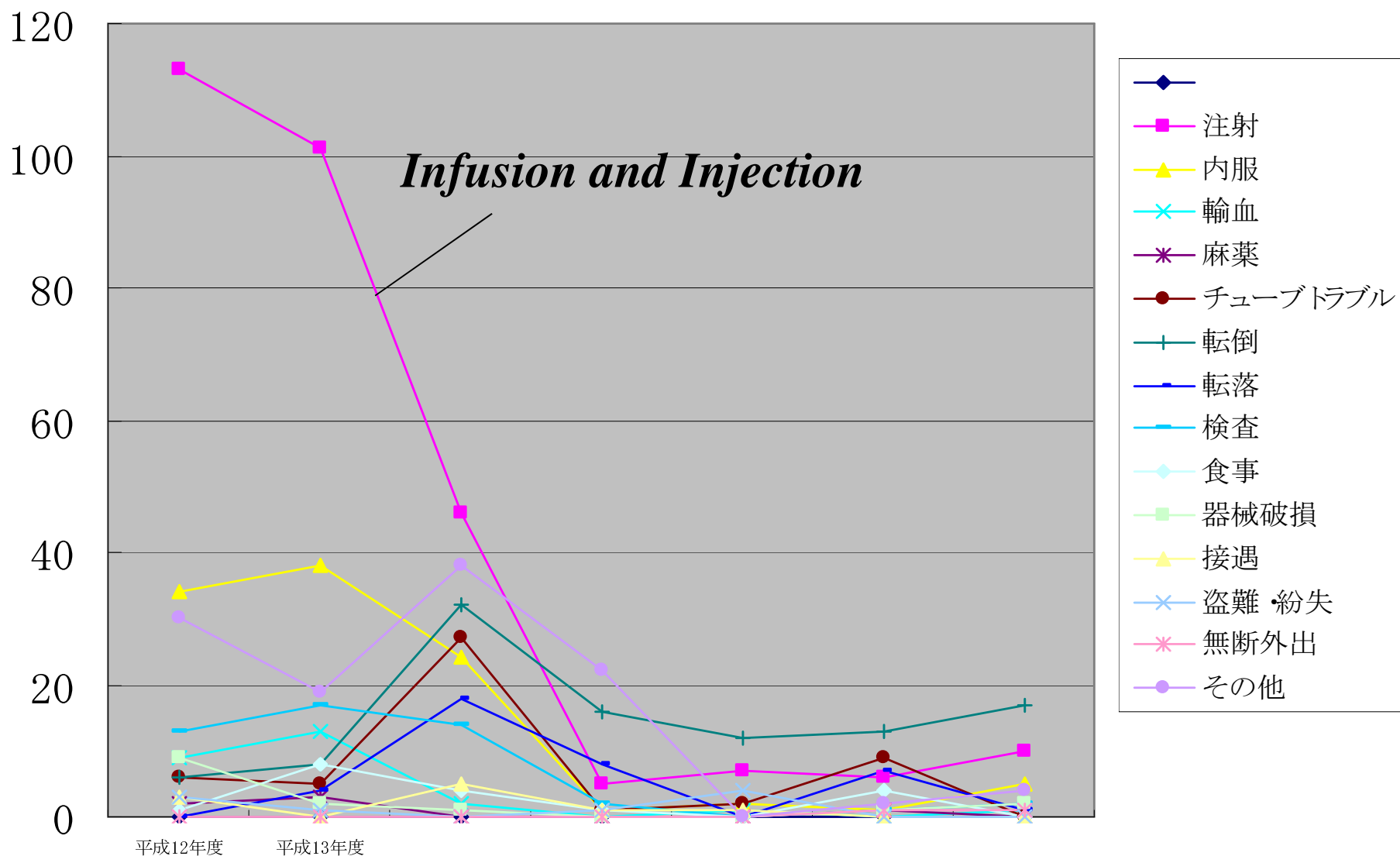
Ave. 15.8



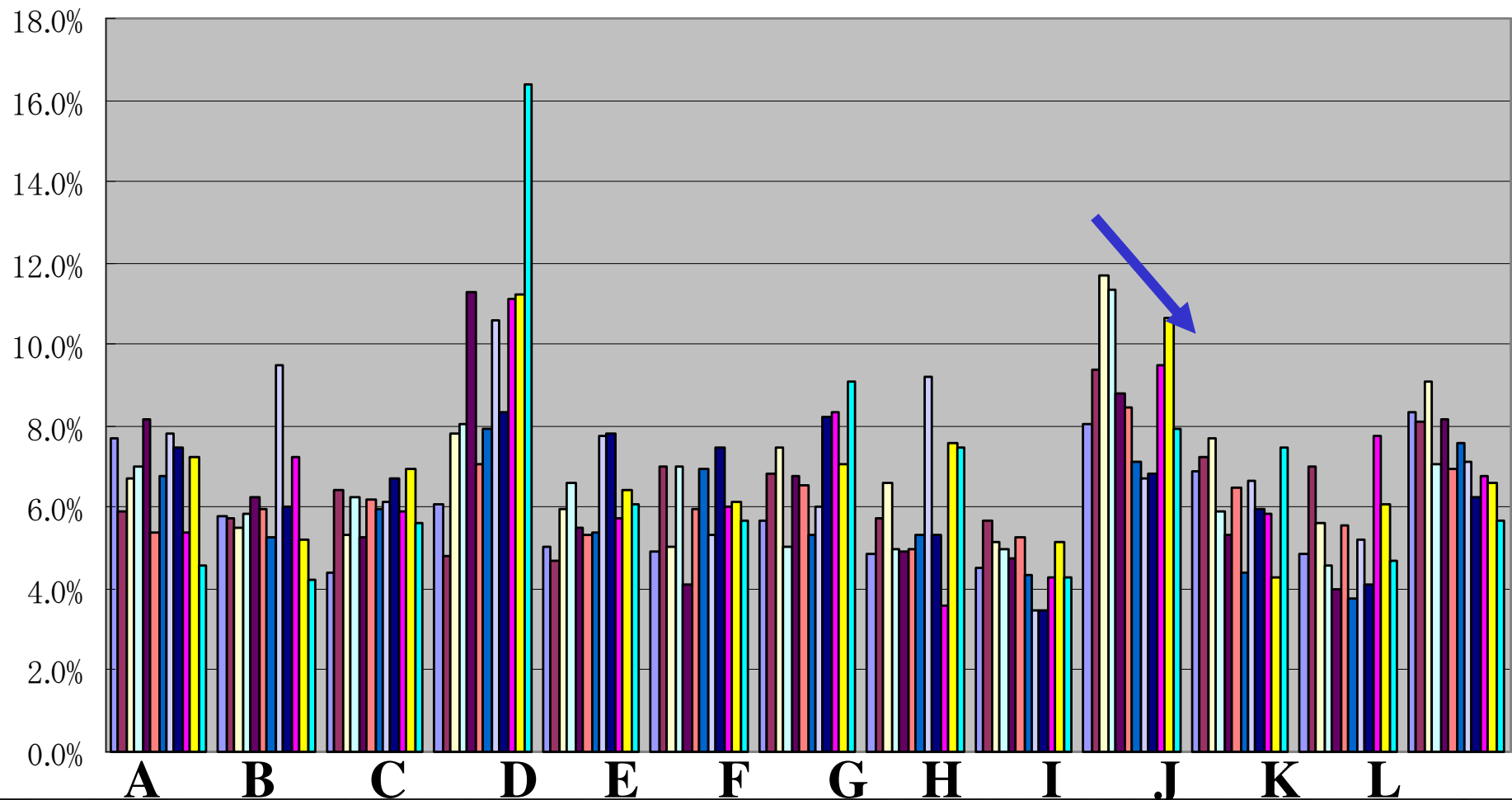
システムの都合により
データ確認不可

◆ 高知日赤 ■ 京都第二 ▲ 盛岡日赤

Number of Incident / Accident report



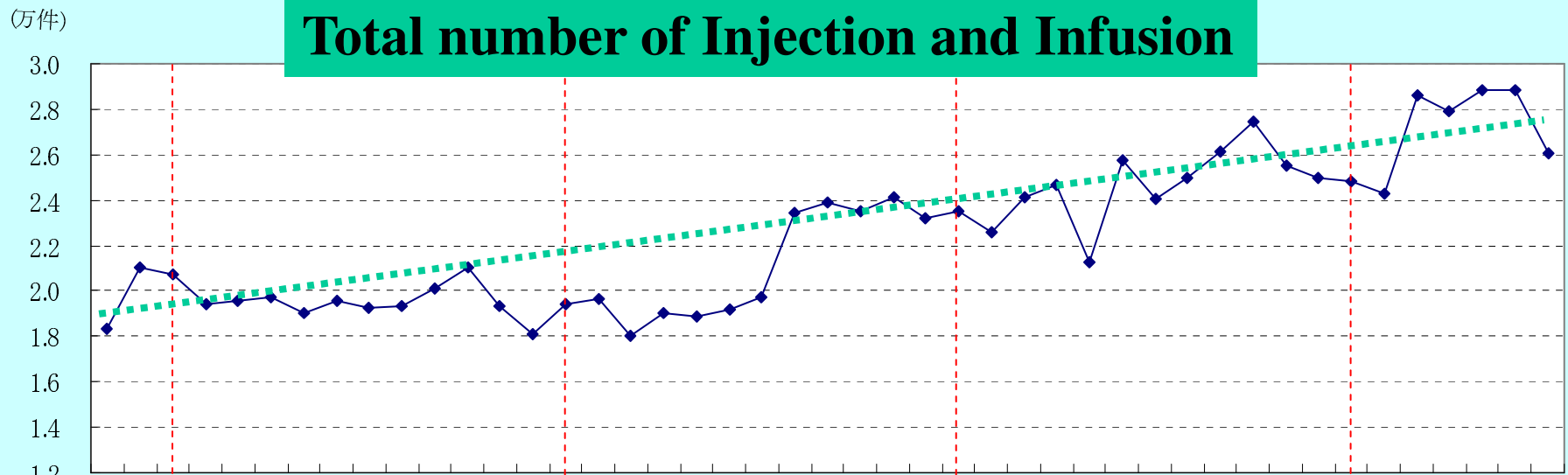
Ratio of warning



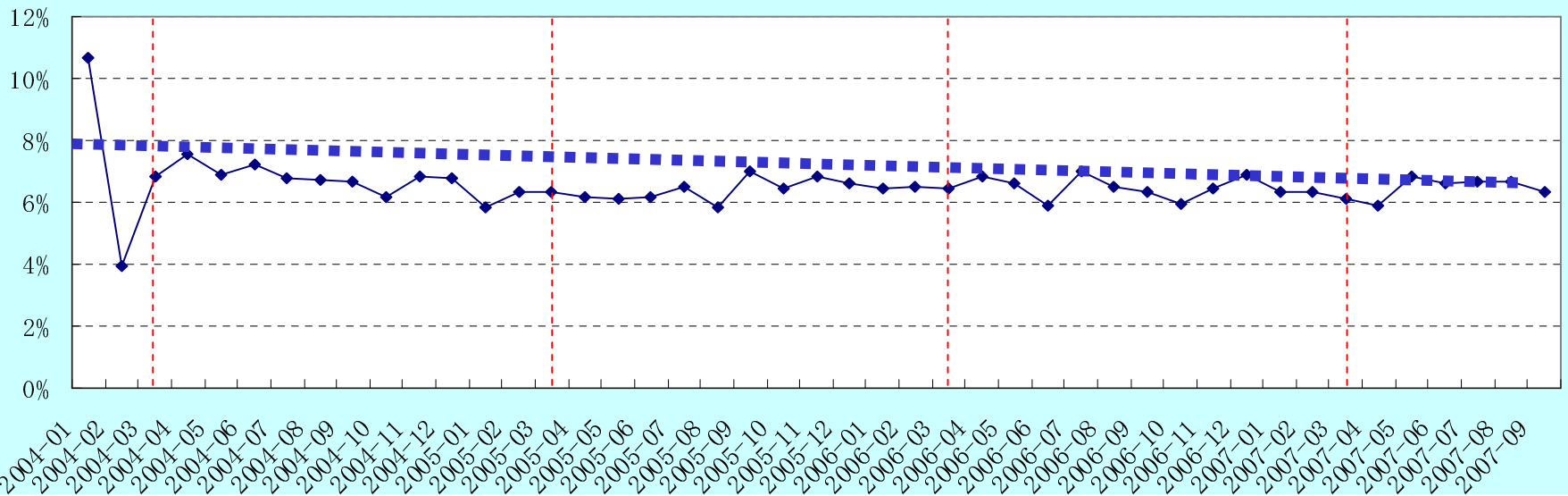
Warning ratio on injection and infusion was decreased in every ward by various effort.

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Total number of Injection and Infusion



Ratio of warning



In the total analysis during 4 years from installation of infusion check systems. Total number of operation for injection and infusion was increased year by Year, however warning ratio was decreased.

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Since the orders of injections and drips are not placed before the uses in the OR and emergency cases, the usage data will be reflected to the distribution system only after the actual use.

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Precise history tracking of the medications is also possible by utilizing the bar code attached on the medication cart. The scanned information of the medications and medical devices will be reflected to the distribution system and purchase orders will be placed automatically based on the preset quantity of inventory.

The list of used medicines will be printed out at the pharmaceutical department and the precise quantity will be replenished on the the medicine cart.



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For blood transfusion, confirmation of the blood product, patient's blood type and the usage schedule is possible with this system.

First of all, scanning of the bar code on the prepared blood product is performed.

Verification of the order contents and transfusion handover information is possible by loading the data from the server. If the verification fails, an error message will appear on the screen. This feature achieves a safe blood transfusion.





患者様から受け取ったカルテから
名前と処方内容を確認します。

In the outpatient unit, we are using the real time medicine management system called “LITERA” manufactured by TOSHO.

First of all, a nurse confirms the injection and drip orders for outpatients, then verifies staff’s ID and retrieves the patient information by using the ID card of the patient.

Once ampoules are picked from the medicine management system, the types of the medicines and quantities will automatically be retrieved and the data will be transferred to the pharmaceutical department.

If a wrong ampoule is picked up, it can be returned to the system by following the directions on the display.

We are also utilizing the real time medicine management system in ICU. It is very important in ICU where serious cases are treated that recordings of implementations are precisely taken, since sudden additional orders, cancellations or changes of the medicines occur often. For this reason, we are using two types of real time medicine management systems. One is for setting at bedside and the other is for picking as many medicines as available in the outpatient unit. Sudden orders also occur in the ER. Therefore, we utilize the real time medicine management system here as well in order to retrieve the precise usage information of various medicines.

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The characteristic feature of our system is that the consumption status of medical materials can be managed by the individual item unit.

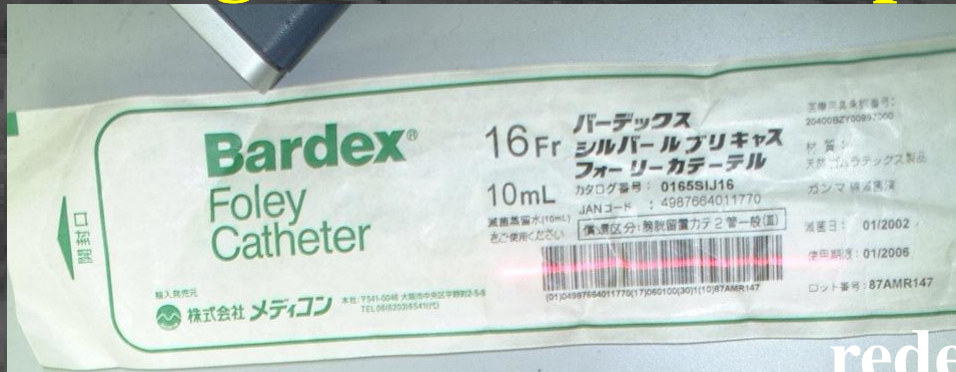
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In inspection, both the pink sticker which is a unique barcode for our in-hospital distribution and the GS-1 code which is attached on the medical material are scanned in order to mutually link the two codes. When inspecting the received materials, the pink barcode, GS-1 barcode, delivery date and delivery time information will be linked. Therefore, all materials are managed by the GS-1 barcode and serial code so that scanning only the in-hospital barcode will enable acquisition of consumption data of each unit.



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Management of consumption : Each patient



redeemable devices by insurance
expensive devices



Check the data of consumption
by using handy terminals which
used for injection and infusion
check

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Management of consumption : Each package



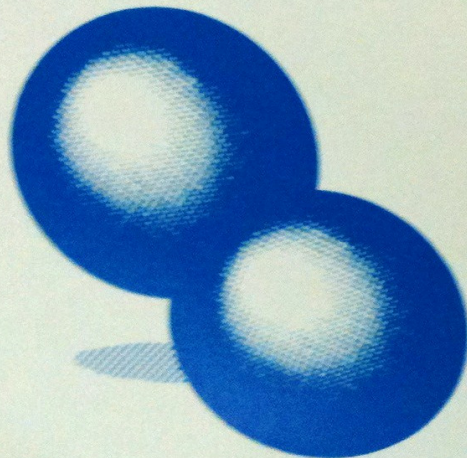
**Inexpensive devices
Low risk devices**

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Management of consumption : Each package

No resource marking materials

KENKO
Sheet



発売元 株式会社ケンコー



ケンコー デイジーシート (約1枚) 滅菌済 500x600W

1901



入数 : 50

ベッドのグッドパートナー
使い捨て防水シート

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	A	B	C	D	E
1	ID	部門名	合計 / 1日分定数 購入金額	合計 / 10月1日平 均払出金額	比率
2	OR		11,377,271	982,445	8.6%
3	Endoscopic center		3,276,973	128,669	3.9%
4	ICU		2,119,206	180,256	8.5%
5	Radiology		1,918,541	234,080	12.2%
6	ER		602,138	54,249	9.0%
7	Urology		540,552	24,911	4.6%
8	Emergency center ward		489,382	47,094	9.6%
9	Central sterilization center		397,894	63,957	16.1%
10	Cardio vascular ward		384,586	47,151	12.3%
11	Surgical ward		293,288	25,004	8.5%
12	Hemofiltration center		293,140	8,917	3.0%
13	Internal medicine ward		283,889	16,743	5.9%
14	Pediatrics ward		238,082	23,450	9.8%
15	Plastic surgery		218,308	1,971	0.9%
16	Neuro surgery		216,312	21,671	10.0%
17	Internal medicine ward (DM)		189,414		
18	Orthopedics ward		182,824		
19	Gynecological ward		178,421		
20	Baby center		168,531	19,906	11.8%
21	Gastroenterology ward		165,838	22,181	13.4%
22	Orthopedics		144,843	7,327	5.1%
23	Gastroenterology ward		126,311	10,689	8.5%
24	Gynecology		125,253	7,152	5.7%
25	Gynecological ward		124,006	14,043	11.3%
26	Surgery		118,711	6,792	5.7%
27	Pharyncholanlyngiology		109,125	2,370	2.2%
28	Central infusion center		98,276	19,815	20.2%
29	MRI		92,508	20,889	22.6%
30	Pediatrics		82,354	4,840	5.9%

OR	11,377,271
Endoscopic center	3,276,973

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Enter equipment and drugs used for procedure

This is a function to input information of devices and medications used in the procedure. Input items includes information of medical devices and supplies by scanning the GS1 bar code with the handy terminal.



Management data

Each department

	A	B	C	D	E	F	G	H	I	J	K		
1	合計 / 払出金額			年月									
2	部門名	診療材料 flag	診療科	200801	200802	200803	200804	200805	200806	200807	200808		
3	手術室	診療材料	00診療科配賦不可	10,535,088	11,747,613	10,852,266	12,045,619	10,526,849	11,460,496	13,921,978	12,751,000		
4			00診療科判断不明	3,865,548	3,949,191	4,267,203	5,232,226	4,005,882	4,269,380	5,471,226	5,400,000		
5			整形外科	26,663,459	15,930,913	14,519,220	20,028,107	19,325,424	23,292,944	27,774,260	25,320,000		
6			心臓血管外科	11,294,059	17,468,063	15,850,273	15,281,027	11,906,257	10,976,164	15,315,973	14,190,000		
7			外科・消化器	3,621,504	4,642,680	3,815,395	3,512,551	4,444,150	4,091,812	4,063,963	4,970,000		
8			眼科	3,875,064	3,711,947	4,119,808	4,389,535	3,074,089	3,156,561	2,950,101	3,050,000		
9			外科	2,661,296	3,475,574	2,340,339	2,753,127	2,051,930	2,273,154	2,373,203	3,860,000		
10			脳神経外科	2,119,022	1,535,002	1,572,701	1,678,914	1,820,689	1,338,761	6,833,492	4,090,000		
11			泌尿器科	796,688	815,826	904,554	756,666	573,417	1,311,860	1,058,892	1,060,000		
12			麻酔科	292,124	364,241	433,935	355,099	385,375	447,224	400,287	450,000		
13			形成外科	265,797	113,652	187,782	208,446	174,174	223,860	253,386	0		
14			婦人科	68,472	89,160	134,250	122,970	112,200	90,150	146,595	80,000		
15			耳鼻科										
16			消化器科			4,300		8,600	17,200	4,300			
17			腎臓内科				4,725						
18			口腔外科					9,460					
19			診療材料 集計			66,058,121	63,843,862	59,002,026	66,369,012	58,418,496	62,949,566	80,567,656	75,270,000
20			対象外	(空白)		1,466,151	1,161,879	627,640	816,353	2,222,329	3,940,692	507,494	1,760,000
21	対象外 集計			1,466,151	1,161,879	627,640	816,353	2,222,329	3,940,692	507,494	1,760,000		
22	総計			67,524,272	65,005,741	59,629,666	67,185,365	60,640,825	66,890,258	81,075,150	77,040,000		
23													
24													
25													
26													

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Another functions of OR management system



2. Patient verification



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Another functions of OR management system



Direct effect for staffs of OR management system

ソレミオ OR WEB - Microsoft Internet Explorer
アドレス http://10.100.199.1/ReportMain.asp

Solemio OR 京都第二赤十字病院 手術室業務支援システム

間接介助者: 0 572

人体図:

トリプルルーメン V①
A V②
A

静脈ライン V① 16 G
静脈ライン V② 18 G
動脈ライン A 左手・右手
バルン 16 Fr 水 5 cc
切開創 ナイロン…左ソケイ
埋没…胸部

心臓内
② 胸骨下
③ 右胸クウ内
④
⑤

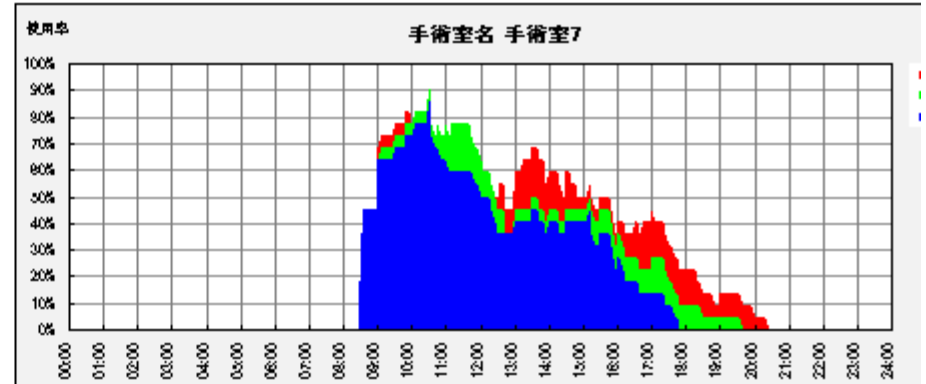
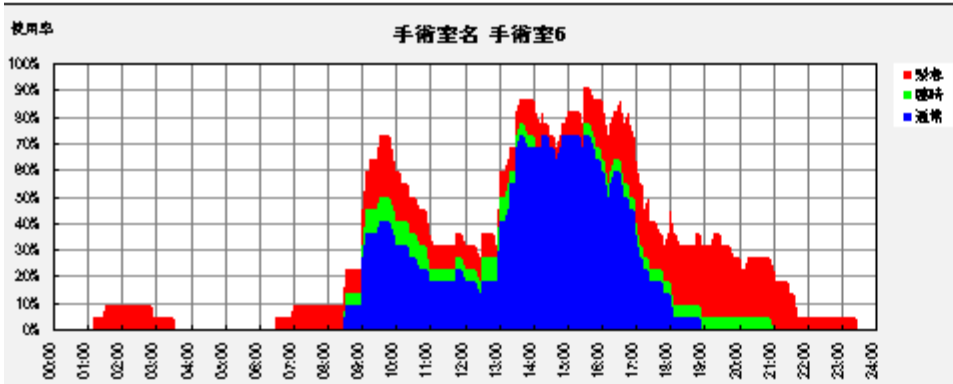
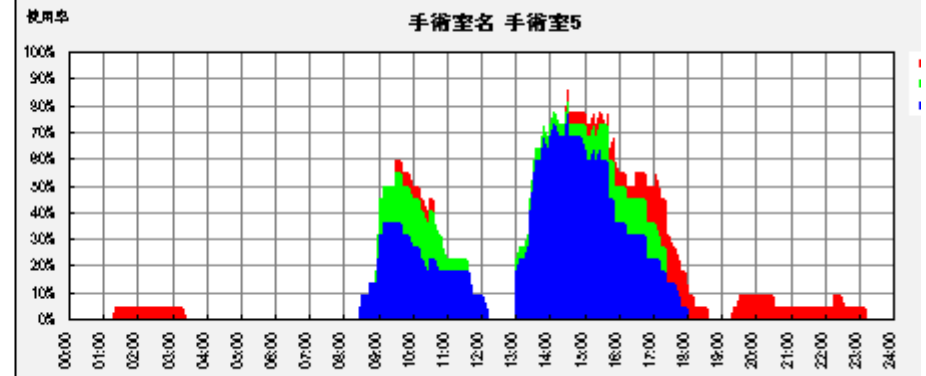
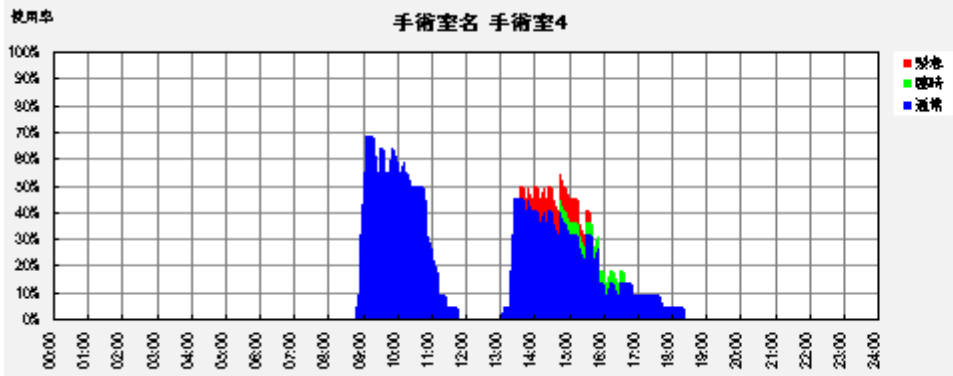
ログインユーザ: 病棟参照用ユーザ SolemioOR Web Browsing System of OR-Information

ページが表示されました

スタート | Leaf Portal - Netscape | MedicalDesktop - Net... | http://ir 10:28

Nursing reports in peri-operation

Rate of operation by each OR room



Management data of surgical operation

	A	B	C	E	F	G	K	L	MNC	P	Q	R	U	V
1		術式名	手術 件数	取 入				支 出						
2				(手術)		平均	合計	手術		平均	合計			
3				手技	特定 医療材料			器材費	薬剤費					
8		CABG合計	1	0	0	130780	130780	130780	277250	301759	579009	579009		
13		ESSD合計	33	7689000	0	306080	242275	7995080	442335	69737	15517	512072		
18		PEA+IOL合計	185	22385000	0	2523	121014	22387523	6406	5607041	30343	5613447		
23		TUR-BT合計	38	3952000	0	117459	107091	4069459	80023	236659	8334	316682		
28		ソイルニア根治術合計	33	1980000	0	270896	68209	2250896	712206	49716	23089	761922		
33		虫垂切除術合計	26	1614600	0	29690	63242	1644290	58929	60896	4609	119825		
38		帝王切開術(C-S)合計	57	8550000	0	210691	153696	8760691	259990	136412	6954	396402		
43		腹腔鏡下胆嚢摘出術									66197	3177438		

	A	B	W	X	Y
1		術式名	利 益		
2			平均	利益額	利益率
3					
8		CABG合計	-448229	-448229	-343%
13		ESSD合計	226758	7483008	94%
18		PEA+IOL合計	90671	16774076	75%
23		TUR-BT合計	98757	3752777	92%
28		ソイルニア根治術合計	45120	1488974	66%
33		虫垂切除術合計	58633	1524465	93%
38		帝王切開術(C-S)合計	146742	8364289	95%
43		腹腔鏡下胆嚢摘出術	140203	6729724	68%

Result of investigation

-Ratio of resource marking by GS1 code in medical materials-

2. 調査結果(概要)

- (1) 医療機器全体では、規格(品目)におけるJAN商品コード取得割合は約9割、MEDIS-DCデータベース登録割合は約5割、バーコード貼付割合は約8割となっている。
- (2) 医療材料では、規格(品目)におけるJAN商品コード取得割合は約10割、MEDIS-DCデータベース登録割合は約6割、バーコード貼付割合は約9割となっている。
このうち特定保険医療材料については、規格(品目)におけるJAN商品コード取得割合は10割近くに達し、MEDIS-DCデータベース登録割合は約7割、バーコード貼付割合は約9割となっている。
- (3) 医療機械では、規格(品目)におけるJAN商品コード取得割合は約8割、MEDIS-DCデータベース登録割合は約4割、バーコード貼付割合は約5割となっている。
このうち特定保守管理医療機器については、規格(品目)におけるJAN商品コード取得割合は約8割、MEDIS-DCデータベース登録割合は約3割、バーコード貼付割合は約5割となっている。
- (4) 体外診断用医薬品では、規格(品目)におけるJAN商品コード取得割合は約10割、MEDIS-DCデータベース登録割合は約4割、バーコード貼付割合は約8割となっている。

Classification database of medical materials and instruments

MEDIE™

INGUIG medical Disposable Equipment
医療材料データベース

株式会社

会社概要
CORPORATE PROFILE

メディエについて
ABOUT MEDIE

お問い合わせ
CONTACT US

会員ログイン
会員の方だけにご利用可能なデータベース検索サービスをご提供しております。ログインはこちらから。
ログインする

製品案内

トピックス

お問い合わせはこちらから
03-3537-1906
受付時間：平日9:00～17:30

ホーム > 製品案内 > CD-ROM

CD-ROM

CD-ROM

プラチナメディエ

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好評発売中!!



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通常価格：92,000円

継続購入割引価格：57,000円(2007年度版をご購入のお客様で取得個数のみ対象)

※金額には消費税は含まれておりません。送料別。

FAXご注文書

プラチナメディエ Q&A

操作はとて簡単!

Kyoto Second Red Cross Hospital, KYOTO, JAPAN

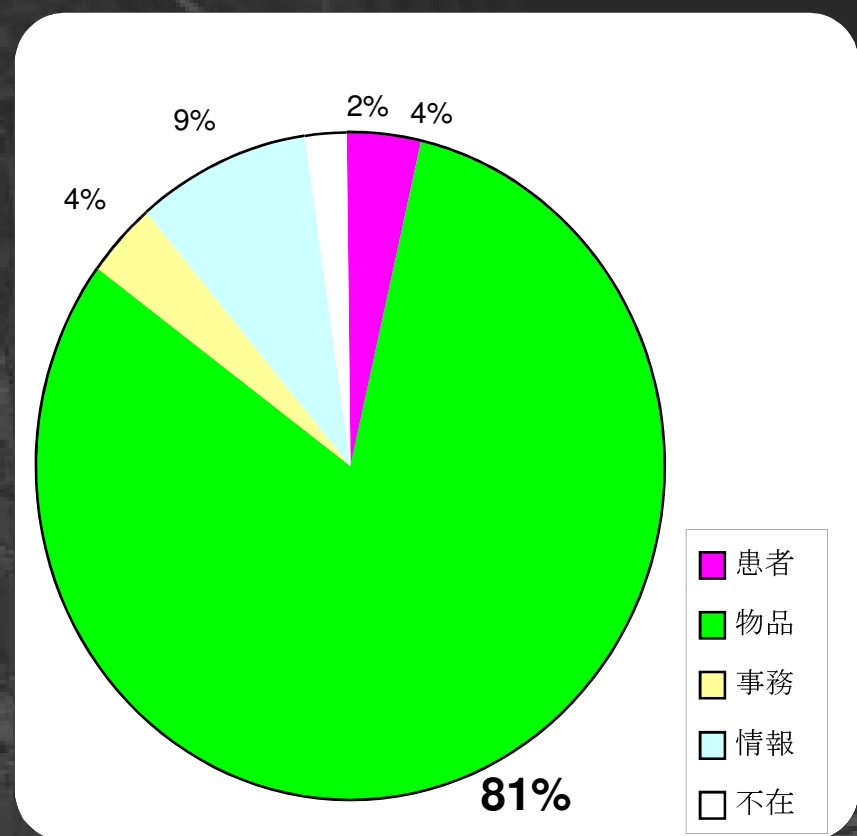
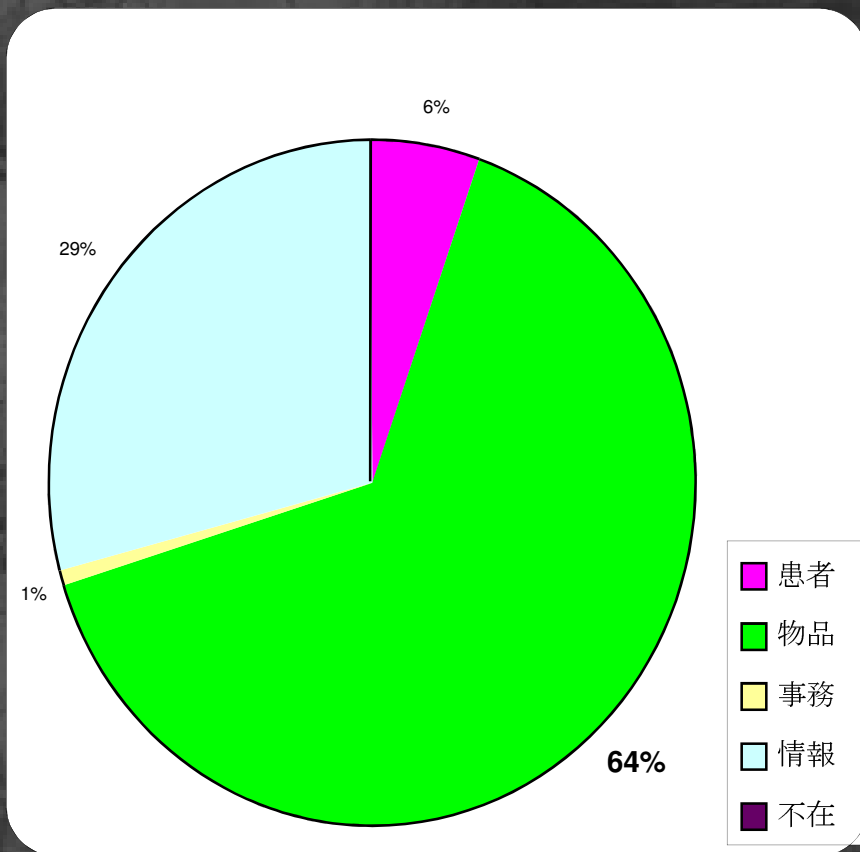
*診療科別患者数及び診療単価調べ				(600床平均は平成19年度分を計上)								
入院												
	患者数(人)			患者1人1日当り診療単価(円)				DPC	出来高	DPC	出来高	手術室医療材料支出
	20年10月	1日平均	500床平均	DPC		出来高	不明分案分					
				20年10月	19年度平均							
内科	2,087	67.3	89.5	49,334	51,357	47,983	102,960,058	100,140,521				
循環器科	944	30.5	35.7	140,640	145,509	139,400	132,764,160	131,593,600	54,571,692			
循環器科	944	30.5	35.7	140,640	145,509	139,400	132,764,160	131,593,600	75,769,891			
呼吸器科	1,007	32.5	39.7	38,812	36,445	33,663	39,083,684	33,898,641				
消化器科	2,796	90.2	57.8	41,040	38,855	37,713	114,747,840	105,445,548	6,064,662			
脳神経内科	932	30.1	29.4	47,503	47,748	41,173	44,272,796	38,373,236				
小児科	1,095	35.3	27.5	51,489	50,125	41,205	56,380,455	45,119,475				
心療内科							0	0				
外科	1,963	63.3	54.0	65,103	60,157	62,329	127,797,189	122,351,827	6,061,177	2,721,697		
心臓血管外科	892	28.8	13.1	131,031	123,837	129,545	116,879,652	115,554,140	23,553,273	10,576,306		
脳神経外科	1,094	35.3	35.9	71,238	66,386	65,783	77,934,372	71,966,602	1,408,403			
整形外科	1,937	62.5	61.7	55,898	55,012	52,684	108,274,426	102,048,908	16,715,761	7,506,006		
皮膚科	168	5.4	4.5	31,275	34,337	28,381	5,254,200	4,768,008				
形成外科	187	6.0	7.4	51,108	47,970	47,965	9,557,196	8,969,455				
泌尿器科	534	17.2	19.8	50,491	46,508	48,319	26,962,194	25,802,346	69,678	31,288		
産婦人科	1,269	40.9	38.1	50,801	49,833	47,809	64,466,469	60,669,621	70,560	31,684		
眼科	578	18.6	14.6	55,229	49,886	54,401	31,922,362	31,443,778	2,774,177	1,245,710		
耳鼻咽喉科	757	24.4	17.9	46,891	49,033	45,245	35,496,487	34,250,465				
放射線科							0	0				
歯科口腔外科	100	3.2	4.0	42,903	35,671	42,903	4,290,300	4,290,300				
合計	18,340	591.6	532.7	59,928	58,246	56,526	1,099,079,520	1,036,686,840				



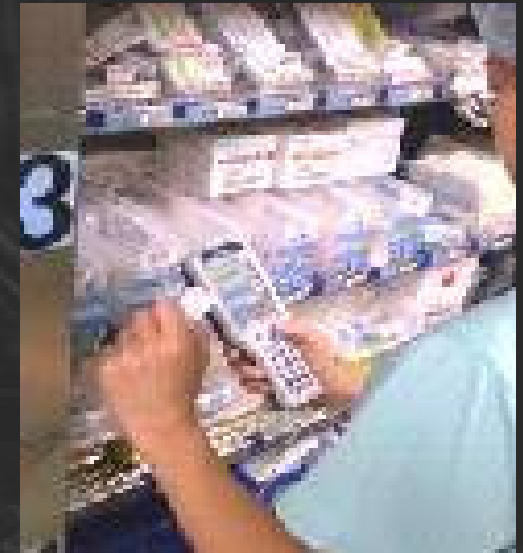
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*診療科別患者									
	差額按分込み	査定引き	薬剤引	一人当たり	20年10月	支出合計	DPC		比率
							20年10月	額	
内科		102,886,962	94,769,747	45,410	49,334	8,190,311	102,960,058	94,769,747	0.07954843
循環器科		78,201,886	77,208,725	81,789	140,640	55,555,435	132,764,160	77,208,725	0.41845205
循環器科		57,003,687	56,010,526	59,333	140,640	76,753,634	132,764,160	56,010,526	0.57812013
呼吸器科		39,069,880	36,428,856	36,176	38,812	2,654,828	39,083,684	36,428,856	0.06792676
消化器科		108,447,045	104,839,956	37,496	41,040	9,907,884	114,747,840	104,839,956	0.08634484
脳神経内科		42,704,089	41,824,780	44,876	47,503	1,039,613	44,272,796	43,233,183	0.02348198
小児科		56,350,278	55,742,137	50,906	51,489	638,318	56,380,455	55,742,137	0.01132162
心療内科		-21,165	-181,721			181,721	0		
外科	119,014,315	118,780,314	117,004,390	59,605	65,103	10,792,799	127,797,189	117,004,390	0.08445255
心臓血管外科	82,750,073	81,406,745	80,424,662	90,162	131,031	36,454,990	116,879,652	80,424,662	0.31190194
脳神経外科	76,525,969	76,521,739	75,656,479	69,156	71,238	2,277,893	77,934,372	75,656,479	0.02922835
整形外科	84,052,659	83,882,647	82,590,251	42,638	55,898	25,684,175	108,274,426	82,590,251	0.23721368
皮膚科		5,201,840	4,876,930	29,029	31,275	377,270	5,254,200	4,876,930	0.07180351
形成外科		9,500,672	9,468,072	50,631	51,108	89,124	9,557,196	9,468,072	0.00932533
泌尿器科	26,861,228	26,800,813	26,114,198	48,903	50,491	847,996	26,962,194	26,114,198	0.0314513
産婦人科	64,364,225	64,344,458	63,231,245	49,828	50,801	1,235,224	64,466,469	63,231,245	0.01916072
眼科	27,902,475	27,889,075	26,941,430	46,611	55,229	4,980,932	31,922,362	26,941,430	0.15603269
耳鼻咽喉科		35,481,314	34,762,211	45,921	46,891	734,276	35,496,487	34,762,211	0.02068588
放射線科		0	0			0	0	0	
歯科口腔外科		0	0	0	42,903	0	4,290,300	4,290,300	0
合計		1,096,585,049	1,069,845,644	58,334	59,928	29,233,876	1,099,079,520	1,069,845,644	0.02659851


Result of time study in OR




Picking tool of preparation for operation



虫垂切除術			
棚番 A-10-3-12	進捗 29/54		
コティットバイクリル 白 2-0 45cmx8本入 鈍エカ...			
E A N 1030490390296			
製品番号 JB947			
	数量 0/2		
別画像表示			
中断	OK	欠品	スキップ

虫垂切除術			
棚番 A-10-3-12	進捗 29/54		
コティットバイクリル 白 2-0 45cmx8本入 鈍エカ...			
E A N 030490390296			
製品番号 JB947			
	数量 1/2		
別画像表示			
中断	OK	欠品	スキップ

虫垂切除術			
棚番 A-12-4-1	進捗 30/54		
テルモシリンジ			
E A N 078950360296			
製品番号 THSF35-300AES...			
	数量 0/3		
別画像表示			
中断	OK	欠品	スキップ

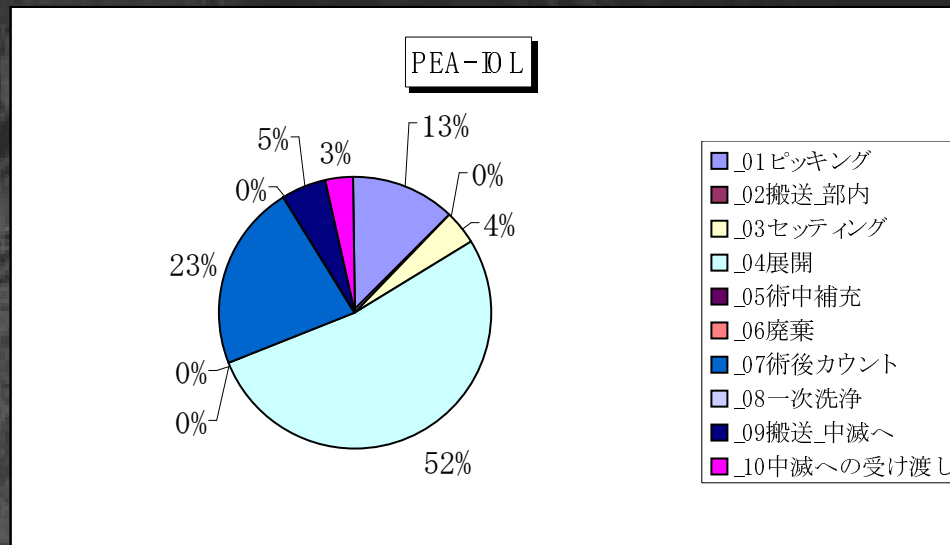
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Kit packing

• PEA-IOL

分類	集計
_01ピッキング	0 02 35
_02搬送_部内	0 00 00
_03セッティング	0 00 51
_04展開	0 10 42
_05術中補充	0 00 00
_06廃棄	0 00 00
_07術後カウント	0 04 39
_08一次洗浄	0 00 00
_09搬送_中滅へ	0 01 07
_10中滅への受け渡し	0 00 40
総計	0 20 33



OR nurse should open 57packages by one operation
In one day, 4-5cases of PEA-IOL operation were performed.
250 packages should be opened!!

Kit packing strategy

1、対象期間: 2007年4月~2008年2月

2、術式別手術件数

順位	全数		夜間(開始時間:17:10~8:30)		休日・祝日			
	術式名	件数	術式名	件数	術式名	件数		
1	PEA+IOL	779	虫垂切除術	26	穿頭術(脳室ドレナージ)	12		
2	外来手術	301	開頭術(開頭血腫除去術)	19	開頭術(開頭血腫除去術)	10		
3	ソケヘルニア根治術	138	腹腔鏡下虫垂切除術	18	腹腔鏡下虫垂切除術	9		
4	帝王切開術(C-S)	115	帝王切開術(C-S)	14	大腿ORIF (エースヒソニング)	9		
5	形成術	112	ドレナージ術	12	術式不明	7		
6	空鏡下胆嚢摘出術(ラパコ)	104	穿頭術(脳室ドレナージ)	12	帝王切開術(C-S)	5		
7	TUR-BT	102	大腿ORIF (エースヒソニング)	11	クリッピング	5		
8	穿頭術(脳室ドレナージ)	90	結腸切除術	10	髄内釘&ネイル	4		
9	ESSD	81	手ORIF	8	虫垂切除術	3		
10	手ORIF	77	開腹術	7	小腸切除術	3		
					結腸切除術	3		
合計(占有率)		1899	合計(占有率)		137	合計(占有率)		70
		総件数 5051			夜間総件数 321			休日総件数 118

Outcome of using picking tool and kit packing

◇ Benefit

① Open package time 2 7 M/ day (1 7 % ↓)

② Picking time . . . 2 0 M/ day (4 % ↓)

	白内障	ヘルニア	ラパコレ	ESSD	C-S	TUR-b t
削減時間 ①	- 1 6 : 3 9	- 2 : 0 5	- 2 : 1 1	- 0 : 5 4	- 3 : 0 8	- 1 : 2 8
削減時間 ②	- 1 2 : 3 9	- 1 : 1 2	- 2 : 0 2	- 0 : 3 5	- 1 : 4 9	- 1 : 5 2

③ Decrease of waste 8 8 7 g (3 4 %)

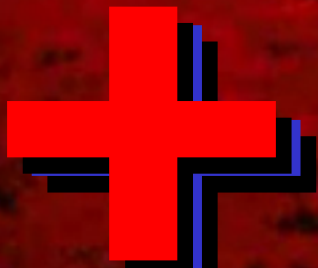
	白内障	ヘルニア	ラパコレ	ESSD	C-S	TUR-b t
重量比較/日	- 5 6 3 g	- 1 1 1 g	- 7 6 g	- 5 2 g	- 8 0 g	- 5 g

Total outcome

<手術部>

		2007	2008		Up ratio
1	Case of OR	5,857	6,063	206↑	103%
2	Over time work	7,801 hr	6,210 hr	1,591 hr ↓	79%
3	Drop out ratio of nurses	13% (Total 38 Drop out 5)	2.5% (Total 40名 Drop out 1名)	10.5% ↓	
4	Preoperation check of patient conditions	—	66%	—	—

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