The Global Language of Business

GS1 Healthcare Provider Advisory Council Webinar

Patient safety in a Japanese hospital through the practical use of GS1 standards and possibilities of AIDC technology

Dr. Kiyohito Tanaka, of Kyoto Second Red Cross Hospital

August 2017

Welcome and thank you for attending!

- Welcome to our August 2017 webinar. Thank you to our guest speaker –Dr. Kiyohito Tanaka, of Kyoto Second Red Cross Hospital, Kyoto, Japan
- Some housekeeping for today:
  - All attendees will be on mute
  - If you have questions during the presentation, please type them into the questions area and these will be monitored then answered at the end of the call
- After the webinar:
  - Within a week, the recording will be posted to: http://www.gs1.org/healthcare/hpac_webinars
  - All previous webinars are also posted to this location, so please feel free to use this resource and share the link

The GS1 Healthcare Provider Advisory Council (HPAC)

Focus is on thought leaders and adopters of GS1 Healthcare Standards from the global clinical provider environment. Their final goal is to improve patient safety, cost efficiency and staff productivity through implementation of GS1 standards.

A forum for sharing and discussion

- About the practical realities of implementation of GS1 Standards in the care giving environment in regards to the impact on clinical care and patient interaction

Identification of projects and case studies

- That support the adoption of GS1 Standards in healthcare providers and retail pharmacies
- For publication, presentation and sharing

A source of expertise and advice

- To those involved in GS1 standards development, the wider Healthcare stakeholder community and senior executives/decision-makers to gain their buy-in and support for implementation of GS1 Standards

HPAC Activities

Webinars

- Monthly webinars open to all stakeholders interested in learning about GS1 standards implementation in the care giving environment.
- http://www.gs1.org/healthcare/hpac_webinars

Awards

- Twice per year
- Provider Best Case Study Award
- Provider Recognition Award
- The prize is travel / accommodation to attend the next GS1 Healthcare conference
- http://www.gs1.org/healthcare/hpac

GS1 Healthcare also holds two global conferences per year. The next conference will be in Chicago from October 17-19, 2017, with significant Healthcare Provider participation on the agenda.

Purpose of Barcode labeling in Japan

1. Reduction of error in administration for patients
2. Track and trace for patient safety
3. Efficiency on the supply chain

- From the point of view above, barcoding for primary packages (especially for pharmaceuticals) were thought to be necessary.

- Elimination of falsified drugs were out of scope when the guidelines were released from the ministry (MHLW).

- Guidelines for barcoding

  pharmaceuticals: 2006

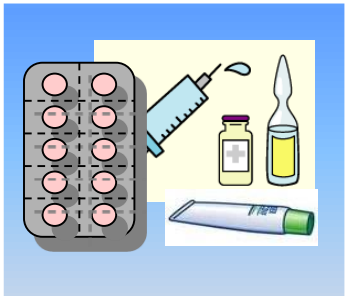
  medical devices: 2008

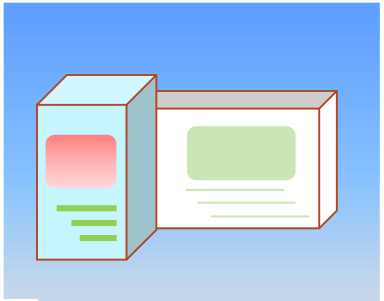
Summery of Barcode Implementation in Healthcare Industry in Japan

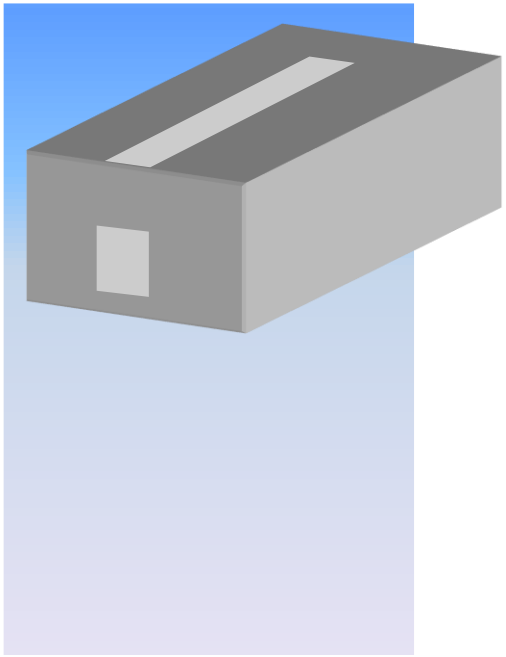
	Prescription Drugs	Medical Devices
1980s ⁄⁄ 1999	Start using GTIN-13 and marking with EAN	
	All of secondary packages were marked with EAN	Guideline (Industry Group)
		Barcode were changed from EAN or ITF to GS1-128
2006 2008	MHLW issued "Guideline for Barcode Labeling of Prescription Drugs" in September 2006	MHLW issued "Guideline for Barcode Labeling of Medical Devices" in March 2008
2015 2016	All primary and secondary packages came to be marked with GS1 DataBar Revised in August 2016	Most packages are marked with GS1-128

Rough sketch of Barcode labelling for prescription drugs (current situation)

< Primary Package> < Secondary Package> < Tertiary Package >







2008 Sep., for Injections
2015 Jul., for Oral medicines

Mandatory indication

AI (01) GTIN

(01)04912345123459

or

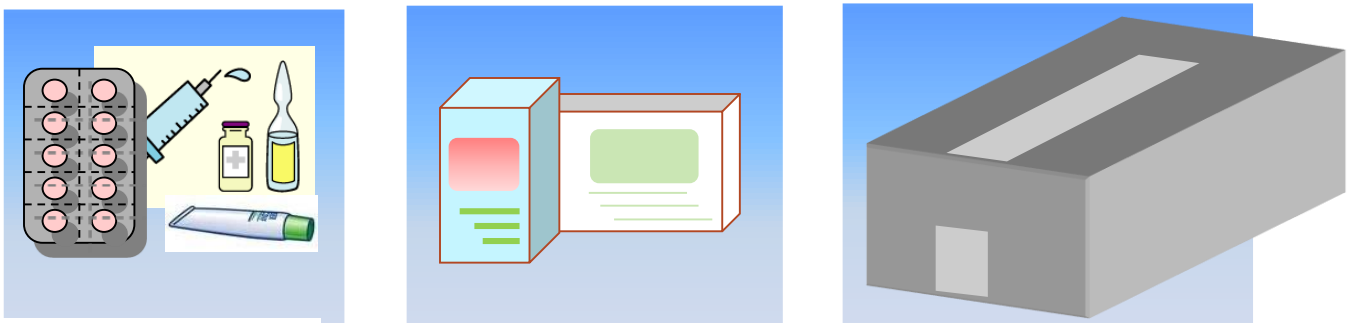
(17)181231(10)ABC12345
(01)04912345123459

(01)24912345000013(17)180110(30)500(10)ABC123

GS1 DataBar **GS1 DataBar Composite** **GS1-128**

Rough sketch of Barcode labelling for prescription drugs (from 2021)

< Primary Package> < Secondary Package> < Tertiary Package >



2021 Apr., for all drugs

AI (01) GTIN

AI (17) Expiration Date and AI (10) Lot No.

(01)04912345123459

(17)181231(10)ABC12345
(01)04912345123459

(01)24912345000013(17)180110(30)500(10)ABC123

GS1 DataBar **GS1 DataBar Composite** **GS1-128**

Rate for barcode labeling

Prescription Drugs

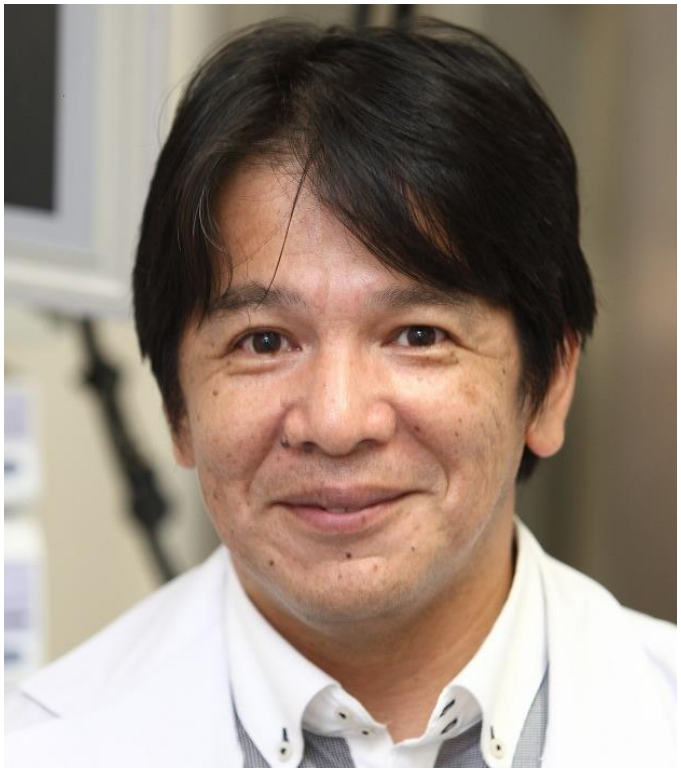
	Specific biological products	injections	Oral medicines
Primary package	100%	100%	97.5%
Secondary package	100%	99.9%	99.8%

Medical Devices

	Medical Devices	In vitro Diagnostics
Primary Package	86.4%	97.2%
Secondary Package	94.5%	99.6%

Survey in 2015

Presenting today



Kiyohito Tanaka M.D, Chief Information Officer
Kyoto Second Red Cross Hospital
Japan

Patient safety in a Japanese hospital through the practical use of GS1 standards and possibilities of AIDC technology

23.Aug. 17’ 20:00-21:00(JPN) GS1 Webinar

Deputy Hospital President : Kyoto Second Red Cross Hospital
Kiyohito Tanaka

Practical use Unified code in the hospital

Out line of K2RCH

Strict Data storage for medicine usage and outcome

- Routine injection and infusion on the ward
- For OR
- For Out patient
- For Intensive care unit (ICU) and emergency center

Strict data storage for medical materials 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.

6000ambulance car/Year

- Department

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

Cardio Vascular IVR：1348, Brain IVR：345, Abdominal IVR：383

GI endoscopy：14563

- Surgical Operation (2008)

Number of Operation　6257　Emergent Operation　1544

(150 Cases increased than 2007's)

We have taken various approaches with Information and Communication Technology to safety management of hospital at K2RC.
We are going to introduce the approaches carried out at our hospital wards in this presentation

Routine flow of injection and infusion

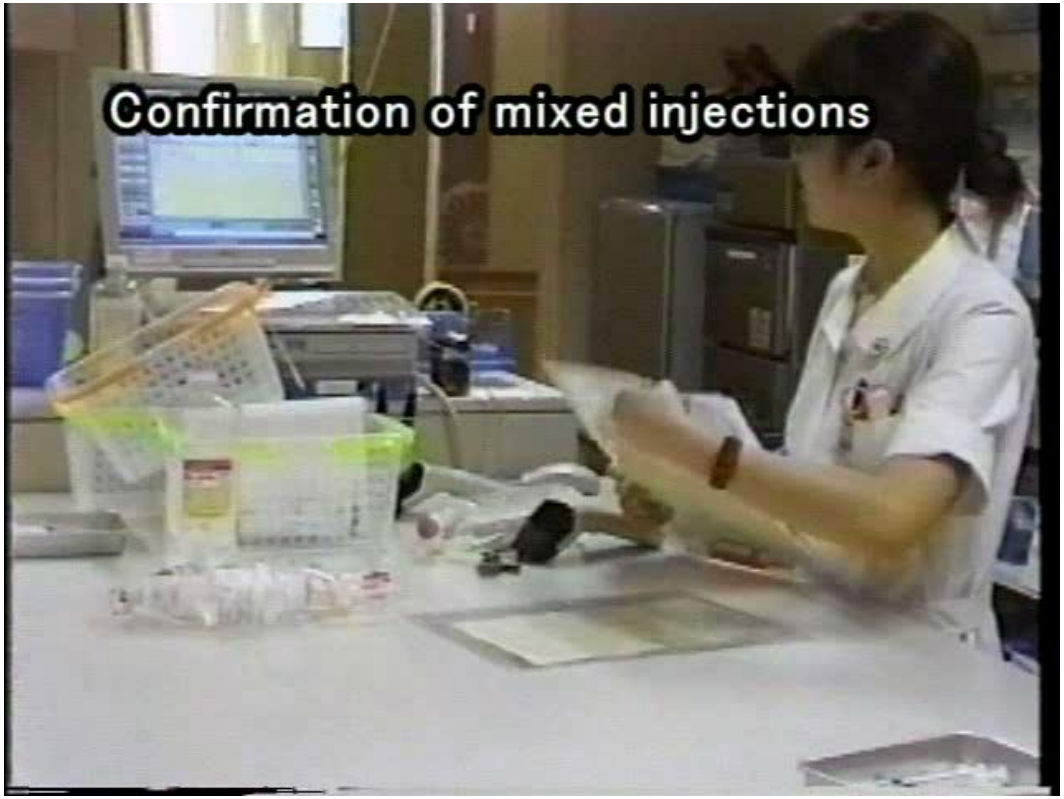
First of all, we are going to explain the operations of checking injections and infusions with handy terminals.

Regarding gathering medications, in our hospital, an ampoule-picker takes medications automatically,

Routine flow of injection and infusion

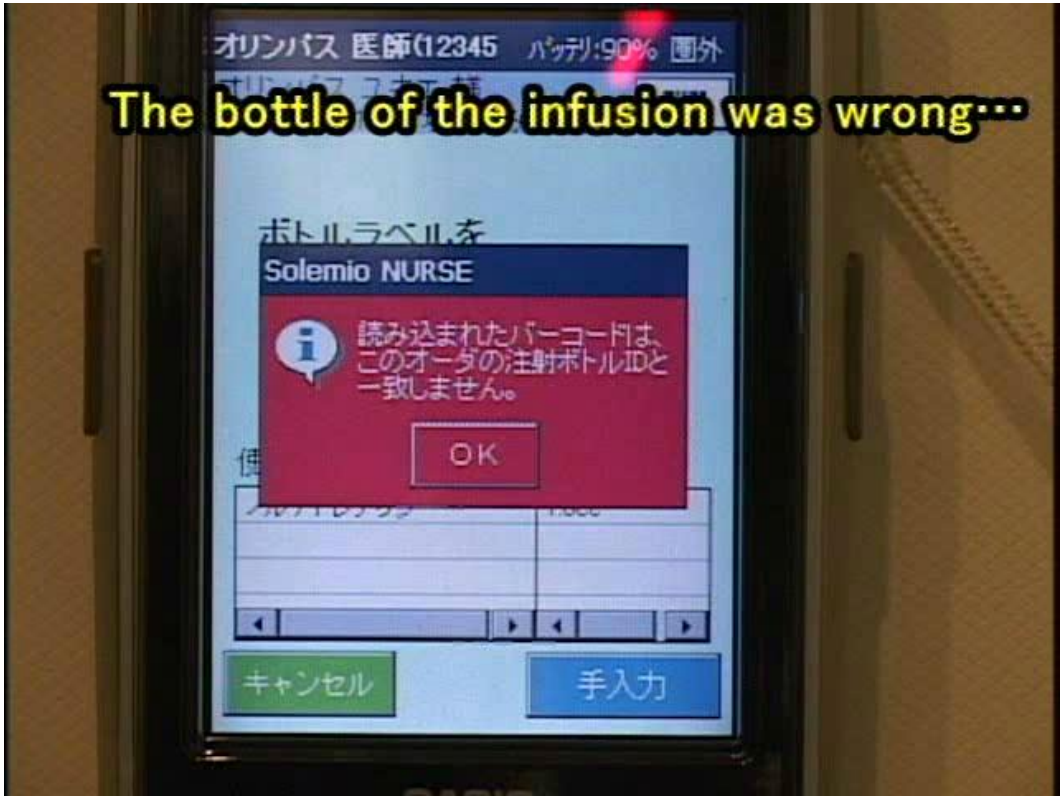
The pharmaceutical chemists put all the medications on the special trays, separate them by each recipe on the basis of the prescriptions, and put the medications to plastic bags along with the ravels to be scanned by handy terminals.

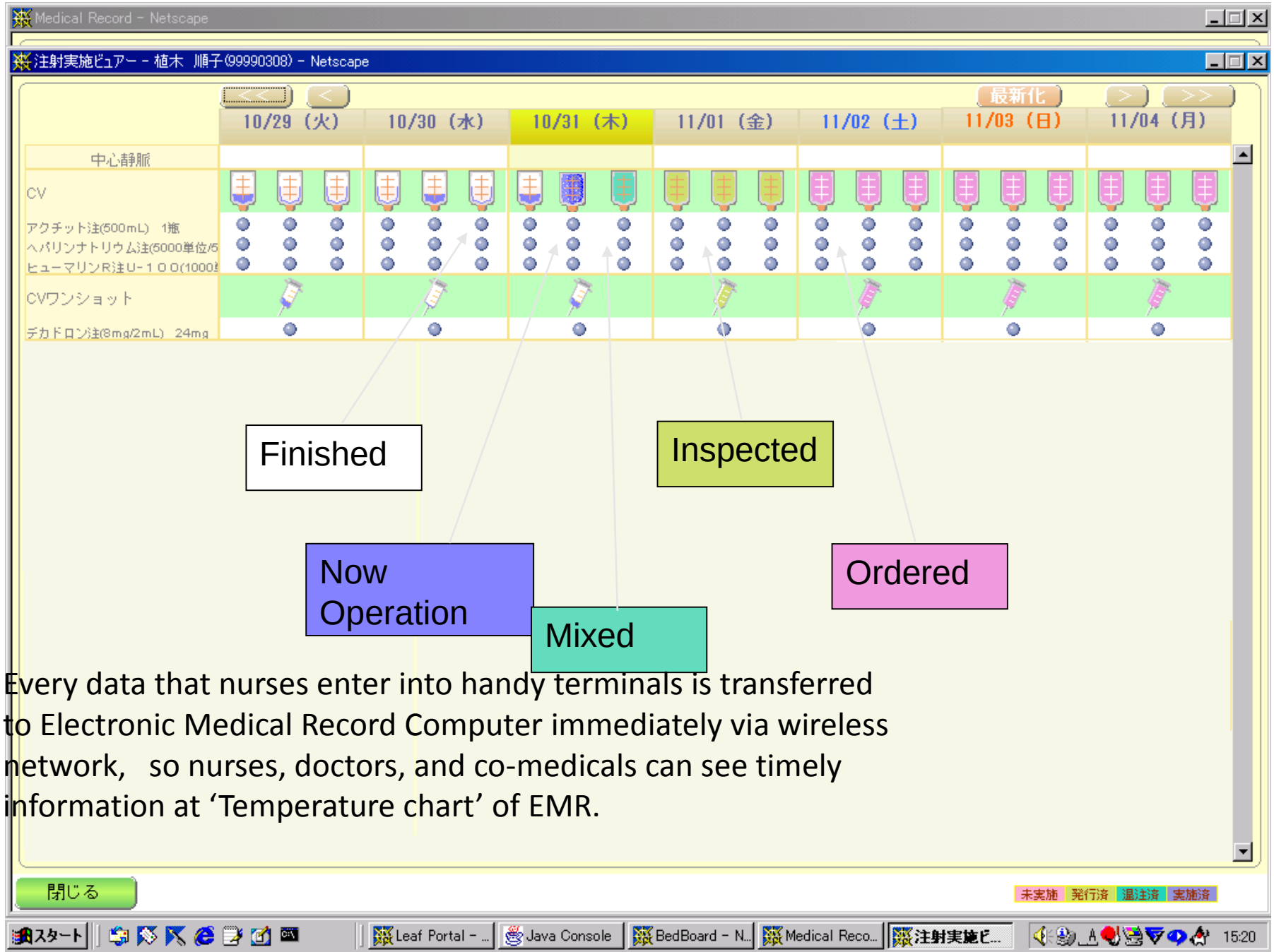
At hospital wards, nurses check the medications if they are correct, and they mix the medications according to the required time, and the usage. When nurses mix the medications, they use handy terminals or bar cord readers to confirm the information on the prescriptions and the ravels of the injections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



At the time of injection and drip infusion, nurses check the bottle bar codes with Identified code of patient on the wrist band

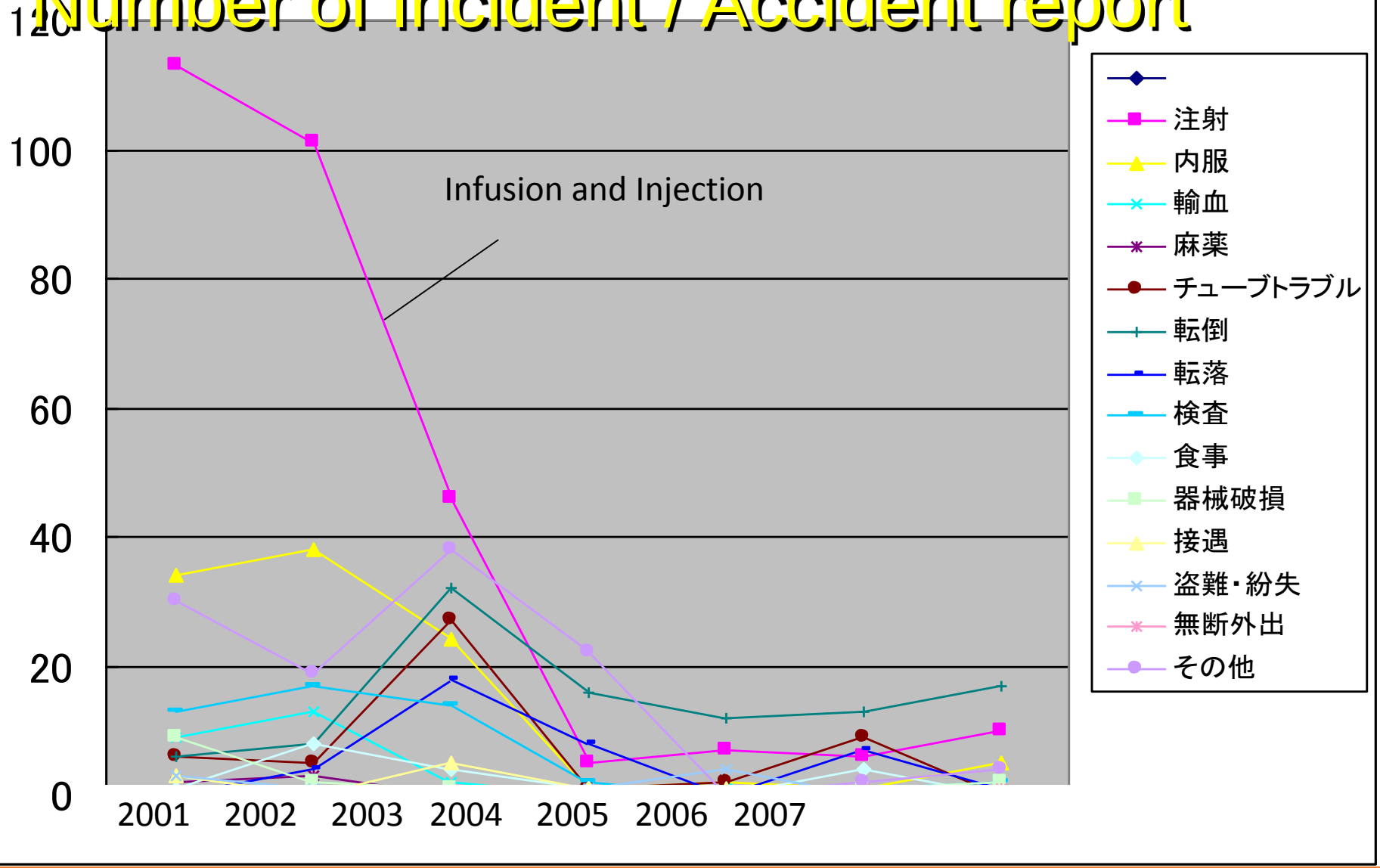
If there are any sudden changes of the orders, if the bottle of the infection or the infusion is wrong, or if the patient is mixed up, the handy terminal displays so with warning beep. Therefore nurses can proceed their work only when prepared injections and infusions, and their patients are totally correct.





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.

Number of Incident / Accident report



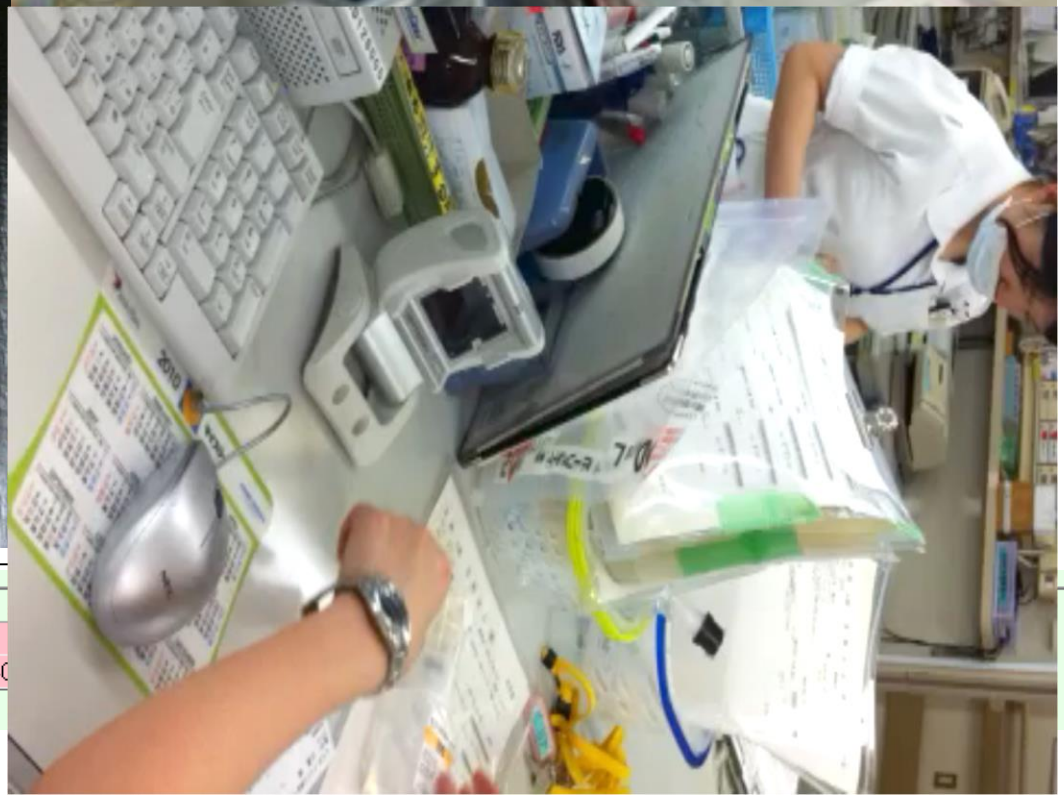
Since installation of this injection and infusion check system,
Incident and accident cases are markedly decreased.

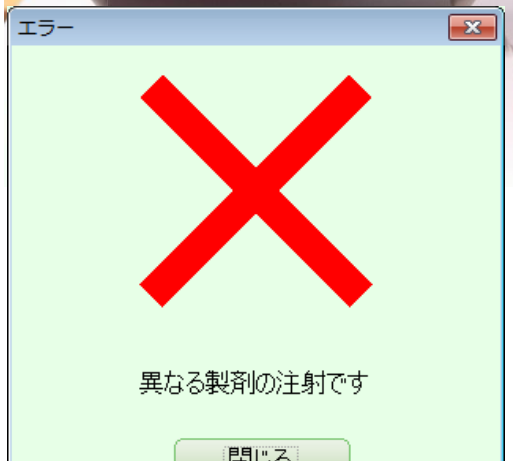
There is only one pitfall in old system. At the time of mixing, nurses and pharmacists check the medication name by only eyes .
Old system has some risk of wrong mixing.

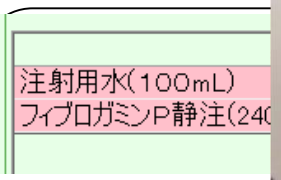
薬剤	使用量	単位	コメント	LOT番号
注射用水(100mL)	1	瓶		
フィブロガミンP静注(240倍以上/4mL)[溶	1	V		26564211H

The newly system was installed in 2011
This system has more safety function;
At the time of mixing, nurses and pharmacists check sorce code printed on vials and bottles. In our hospital, we confirm all medication with doctors order via GS1 codes

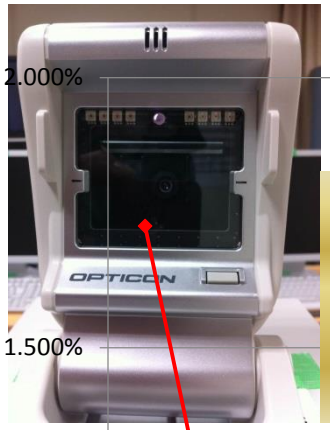
2011/10 ～





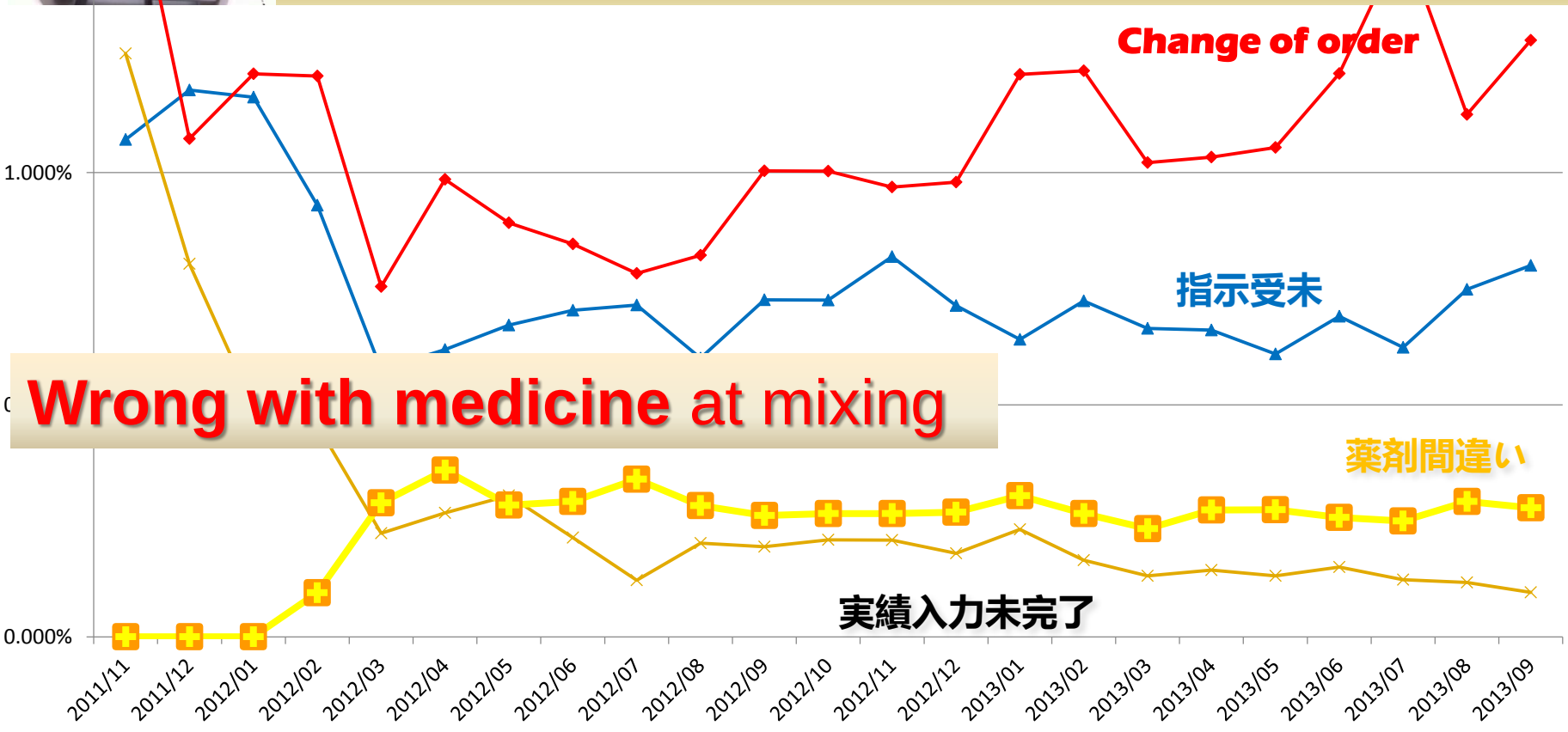


At the time of mixing, nurses and pharmacists check GS1 code printed on vials and bottles. In our hospital, we confirm all medication with doctors order via GS1 codes



@Mixing -Level1 Warning-

New system using source printing code
at mixing exclude 2% incident about injection.
2% is high or low?



Wrong with medicine at mixing

Bar code check machine

We investigated all vials, ampules, bottles in our hospital via LVS9505

Investigation report

INTEGRA 9500/9505 検証報告書

全体: 3.5/05/660 (A)

オペレータ署名

第二署名

1D	
Symbology	データバー リミテド
デコードされたテキスト文字	04987116560184
Xdim	0.251mm
エッジデタミネーション	OK
最小反射率	OK
最小エッジコントラスト	OK 64%
デコード	OK 44
クワイエットゾーン	OK
コントラスト	3.7 (A) 73%
モデュレーション	4.0 (A) 87%
デコーダビリティ	3.5 (A) 62%
ディフェクト	4.0 (A) 3%
Blemish	4.0 (A) 0%
最小反射率	2%
最大反射率	76%
全体しきい値	39%
バーの実測高さ	2.679mm
バーの太り・細り	-9%

その他の情報	
ReportID	474
オペレーター	admin (LVS Administrator)
application standard	ISO/IEC検査規格 15415/15416
採用中の開口径	Reference # 05 (0.127 mm)
波長	660nm
日時	04-Aug-2011 15:44 日本; 04-Aug-2011 06:44 GMT
時差	GMT +9
セクター サイズ	27.6mm by 7.6mm
直近キャリブレーション日時	04-Aug-2011 11:16 日本; 04-Aug-2011 02:16 GMT
検証最大幅	98.4mm (カメラ 1 is 1616x1216 ピクセル)
シリアル番号	装置番号: 99999, カメラ 1: 73176558
ソフトウエア内容とそのバージョン	INTEGRA 9500/9505 Version 3.0.6g
INTEGRA 9500/9505 製造者:	Label Vision Systems, Inc. 101 Auburn Court Peachtree City, Georgia, 30269, USA www.lvs-inc.com

We started reading of all of bar codes printed on all medication.

In these situation, miss-reading was occurred at some medications. We investigated all of bar codes on the ampuls and bottles.

Supported by Medical barcode examination center

Ampules, Vials

Grade

Minimum length of bars

INTEGRA 95xx 検証報告書

全体: 3.8/05/660 (A)

オペレータ署名

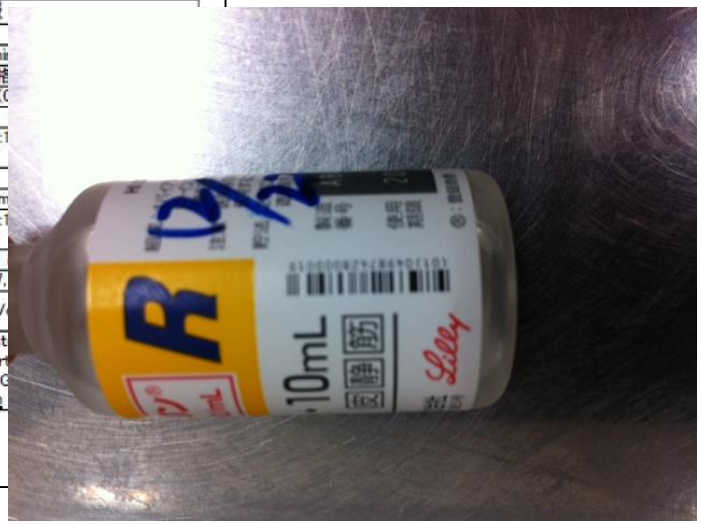
第二署名

This symbol should use application standard GS1

1D	
Symbology	データバー リミテド
Decoded テキスト	04987081737901
Xdim	0.209mm
エッジデタミネーション	OK
最小反射率	OK
最小エッジコントラスト	OK 56%
デコード	OK 45
クワイエットゾーン	OK
コントラスト	3.8 (A) 74%
モデュレーション	4.0 (A) 76%
デコーダビリティ	4.0 (A) 75%
ディフェクト	4.0 (A) 6%
Blemish	4.0 (A) 0%
最小反射率	4%
最大反射率	78%
全体しきい値	41%
バーの実測高さ	2.644mm
バーの太り・細り	-1%

その他の情報	
ReportID	12
オペレーター	admin (LVS Admi
application standard	ISO/IEC検査規格
採用中の開口径	Reference # 05 (
波長	660nm
日時	12-Apr-2012 16:1 2012 07:19 GMT
時差	GMT +9
セクター サイズ	21.4mm by 2.7mm
直近キャリブレーション日時	12-Apr-2012 16:1 2012 07:13 GMT
検証最大幅	94.9mm (カメラ 1
シリアル番号	装置番号: 60577,
ソフトウエア内容とそのバージョン	INTEGRA 95xx V
INTEGRA 95xx 製造者:	Label Vision Syst 101 Auburn Court Peachtree City, G www.lvs-inc.com

ISO15416 JIS X 0520 で設定される
バーコード検証を行いグレードC以上を推奨
A4.0～3.5
B3.4～2.5
C2.4～1.5
D1.4～0.5
F0.4～0.0
の5段階表示



3.6Aグレードだが、スキャナーで読取りが出来ない？

Bottles

Grade

INTEGRA 95xx 検証報告書

全体: 4.0/05/660 (A)

オペレータ署名

第二署名

This symbol should use application standard GS1

1D	
Symbology	データバー リミテド
デコードされたテキスト文字	04987073200260
Xdim	0.249mm
エッジデタミネーション	OK
最小反射率	OK
最小エッジコントラスト	OK 77%
デコード	OK 39
クワイエットゾーン	OK
コントラスト	4.0 (A) 90%
モデュレーション	4.0 (A) 86%
デコーダビリティ	4.0 (A) 78%
ディフェクト	4.0 (A) 7%
Blemish	4.0 (A) 0%
最小反射率	4%
最大反射率	94%
全体しきい値	49%
バーの実測高さ	2.291mm
バーの太り・細り	-6%

その他の情報	
ReportID	3
オペレーター	admin (LVS Administrator)
application standard	ISO/IEC検査規格 15415/15416
採用中の開口径	Reference # 05 (0.127 mm)
波長	660nm
日時	12-Apr-2012 16:15 日本; 12-Apr-2012 07:15 GMT
時差	GMT +9
セクター サイズ	21.6mm by 3.8mm
直近キャリブレーション日時	12-Apr-2012 16:13 日本; 12-Apr-2012 07:13 GMT
検証最大幅	94.9mm (カメラ 1 is 1616x1216 ピクセル)
シリアル番号	装置番号: 60577, カメラ 1: 73176558
ソフトウエア内容とそのバージョン	INTEGRA 95xx Version 3.0.7g
INTEGRA 95xx 製造者:	Label Vision Systems, Inc. 101 Auburn Court Peachtree City, Georgia, 30269, USA www.lvs-inc.com

ISO15416 JIS X 0520 で設定される
バーコード検証を行いグレードC以上を推奨
A4.0～3.5
B3.4～2.5
C2.4～1.5
D1.4～0.5
F0.4～0.0
の5段階表示

4.0Aグレードはスキャナー読取りも良好

Supported by Medical barcode examination center

Undefined source marking

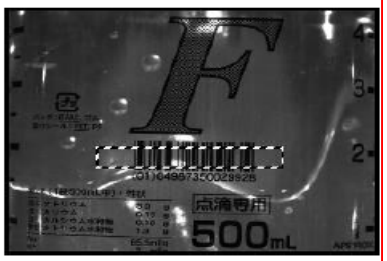
Some time we encounter bad-reading bar codes on the bottles.
Only one color direct printing without background is not defined.
At the time of reading, reflection of electric flush
by bar code reader will be occur.
And in the bottle small bubbles are available, bubbles will be
avoid to correctly read via reader.

Bottles

Grade

INTEGRA 95xx 検証報告書

全体: 1.1/10/660 (D)



オペレータ署名

第二署名

Edge determination failures reduced the overall grade by 25%
Non ISO Blemish errors reduced the Overall grade by 16%
This symbol should use application standard GS1

1D	
	データバー リミテド
れたテキスト文字	04987350029928
	0.418mm
ミネーション duced Overall	25% ERROR
	OK
コントラスト	OK 26%
	OK 61
クワイエットゾーン	OK
コントラスト	2.2 (C) 51%
モデュレーション	2.1 (C) 56%
デコーダビリティ	3.2 (B) 59%
ディフェクト	1.7 (C) 24%
Blemish	3.3 (B) 16%
最小反射率	1%
最大反射率	52%
全体しきい値	22%
バーの実測高さ	5.699mm
バーの太り・細り	12%

その他の情報	
ReportID	10
オペレーター	admin (LVS Administrator)
application standard	ISO/IEC検査規格 15415/15416
採用中の開口径	Reference # 10 (0.254 mm)
波長	660nm
日時	12-Apr-2012 16:18 日本; 12-Apr-2012 07:18 GMT
時差	GMT +9
セクター サイズ	47.8mm by 5.7mm
直近キャリブレーション日時	12-Apr-2012 16:13 日本; 12-Apr-2012 07:13 GMT
検証最大幅	94.9mm (カメラ 1 is 1616x1216 ピクセル)
シリアル番号	装置番号: 60577, カメラ 1: 73176558
ソフトウエア内容とそのバージョン	INTEGRA 95xx Version 3.0.7g
INTEGRA 95xx 製造者:	Label Vision Systems, Inc. 101 Auburn Court Peachtree City, Georgia, 30269, USA www.lvs-inc.com

ISO15416 JIS X 0520 で設定される
バーコード検証を行いグレードC以上を推奨
A4.0～3.5
B3.4～2.5
C2.4～1.5
D1.4～0.5
F0.4～0.0
の5段階表示

Grade D is very difficult to read by bar code reader

Supported by Medical barcode examination center

New type bar on the paper

We requested to medication makers that bottle printings are exchanged to well-reading print.
Some maker renewed direct printing to black colored print on the papers.
Finally old type print is fusible.

Check the lot number of Specific biological materials

製剤種番号:　0226012

ﾛｯﾄ番号：　9971225807

輸血実施 - NEC 医師デモ

注射準備 | 注射実施 | 輸血受取確認 | 輸血実施 | 検体チェック | ME機器管理 | 出棟チェック

輸血量: ml

実施者: NEC 医師デモ

実施者2: テスト 検査技師

実施者2

開始時刻: 6/16(木) 11:19 開始

終了時刻: 6/16(木) 11:19 終了

副作用

⑥

⑨

For the specific biological materials, in our system lot numbers and serial numbers can strage.

終了登録・副作用選択

5分 | 15分 | 終了

副作用なし　中止

蕁麻疹	ショック
発疹	血圧低下
掻痒感	血圧上昇
発熱	乏尿
悪寒・戦慄	血尿
顔面蒼白	その他
顔面紅潮	
悪心・嘔吐	
動悸	
呼吸困難	

⑦ ⑩

やめる　登録

Practical use GS1 code in the hospital

- Strict Data storage for strict medicine usage and outcome
  - Routine injection and infusion on the ward
  - **For OR**
  - **For Intensive care unit (ICU) and emergency center**

Routine work about injection in the wards is so simple, checking system is very useful, however, 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.

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.

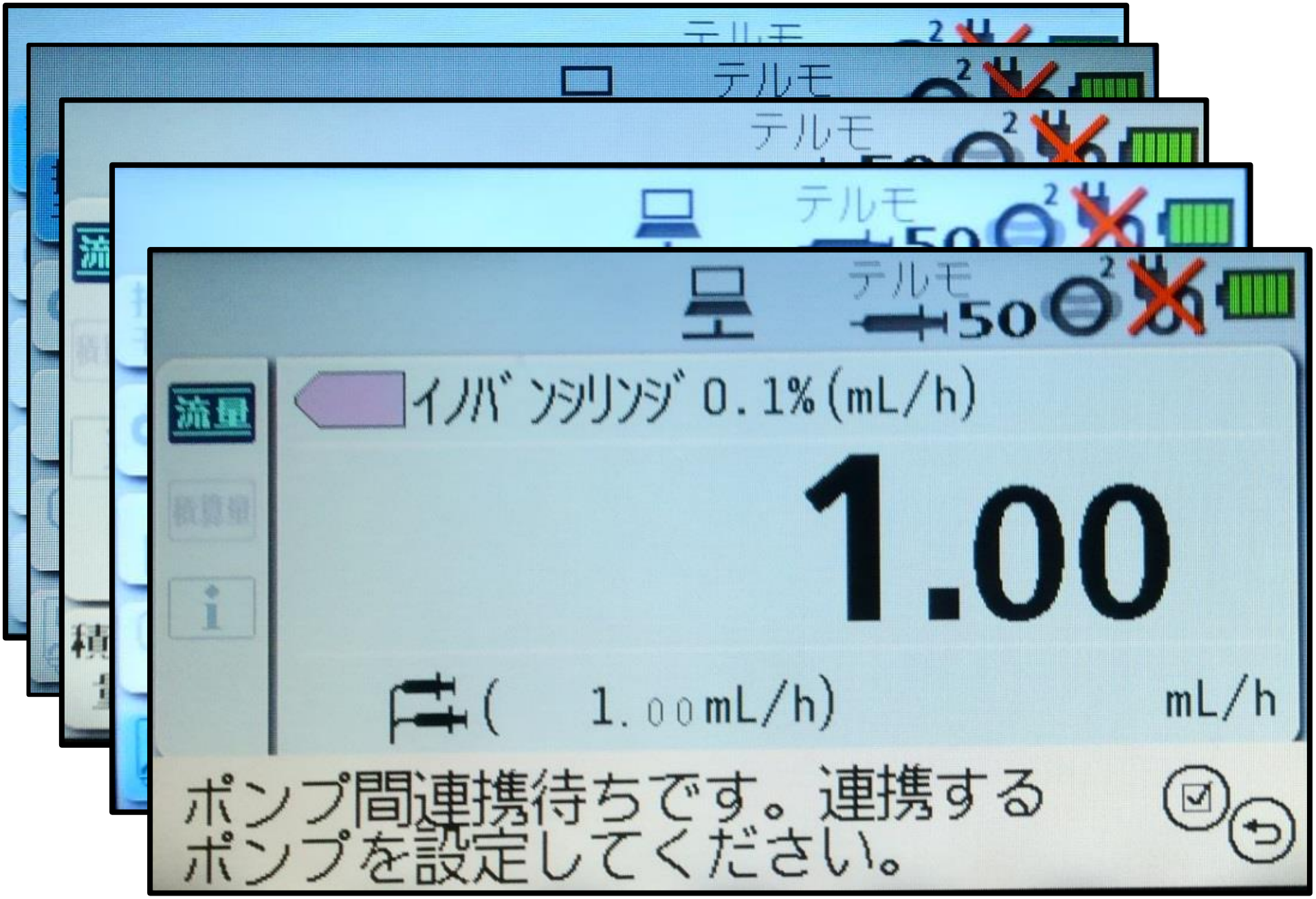
The list of used medicines will be printed out at the pharmaceutical department and the precise quantity will be replenished on the medicine cart.

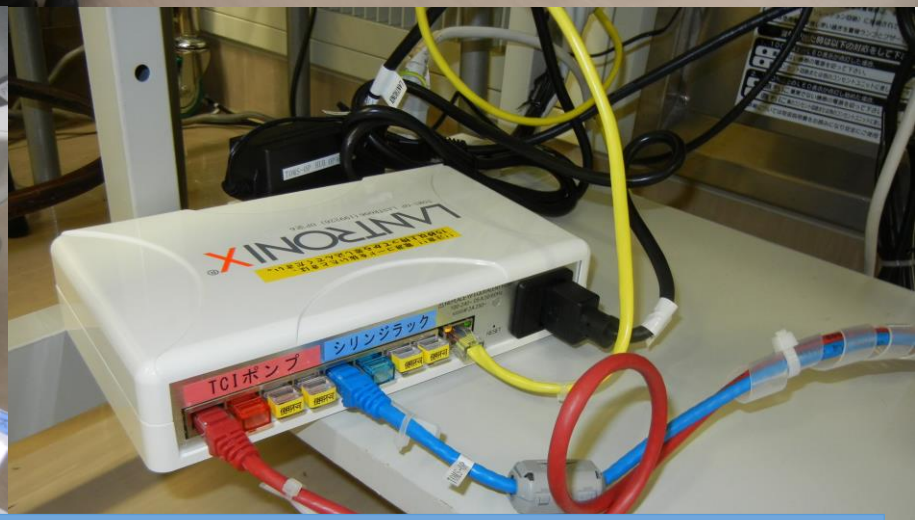
Enter equipment and drugs used for procedure

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.

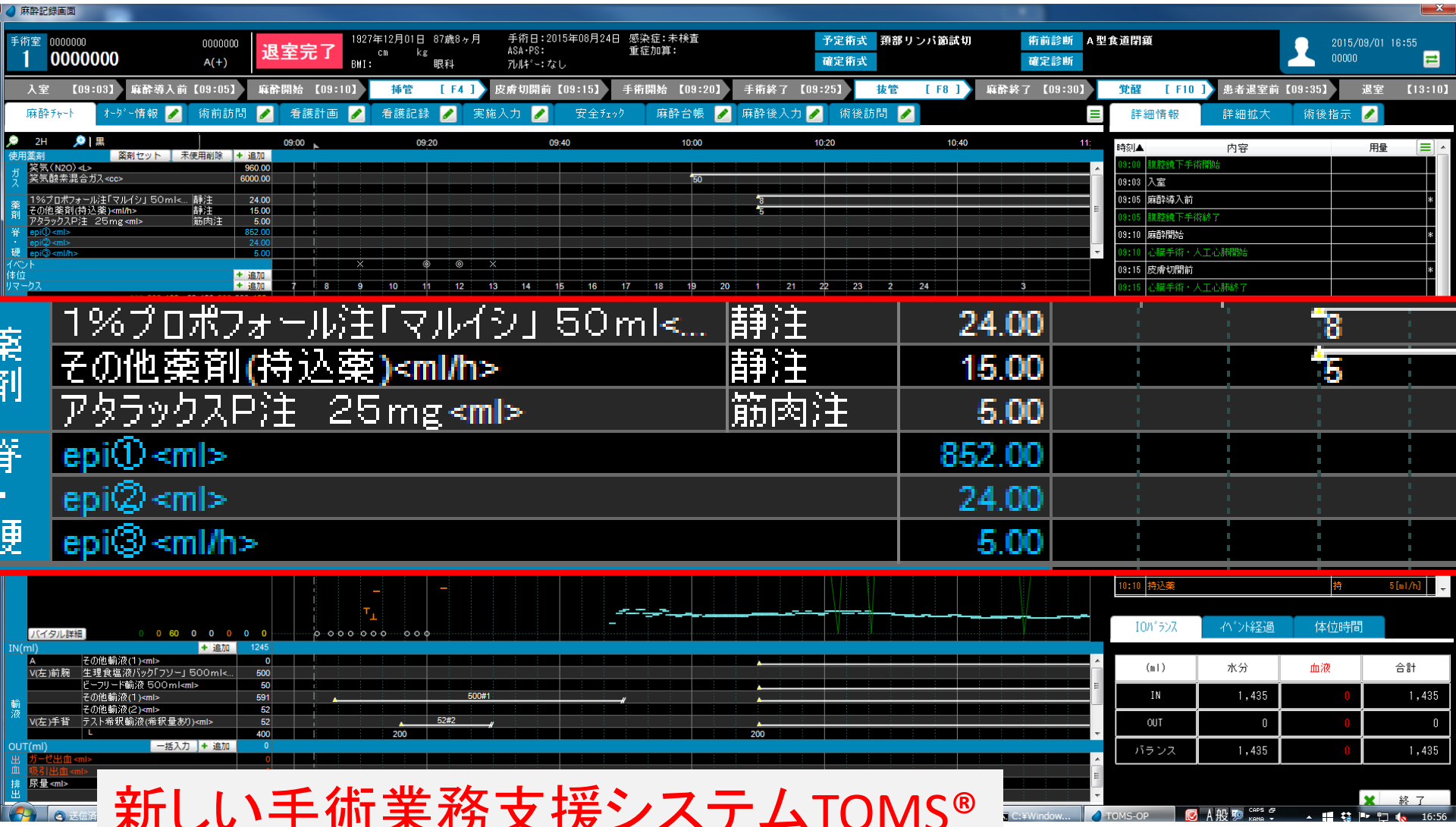
GS1 code usage for anesthesiologist

- Newly developed Syringe Pump
  - This new machine can bring not only flow data but also name of drugs via LAN cable


テルモ
テルモ
テルモ
テルモ
50
流量
イノバンシリンジ 0.1%(mL/h)
1.00
(1.00mL/h)
mL/h
ポンプ間連携待ちです。連携する
ポンプを設定してください。

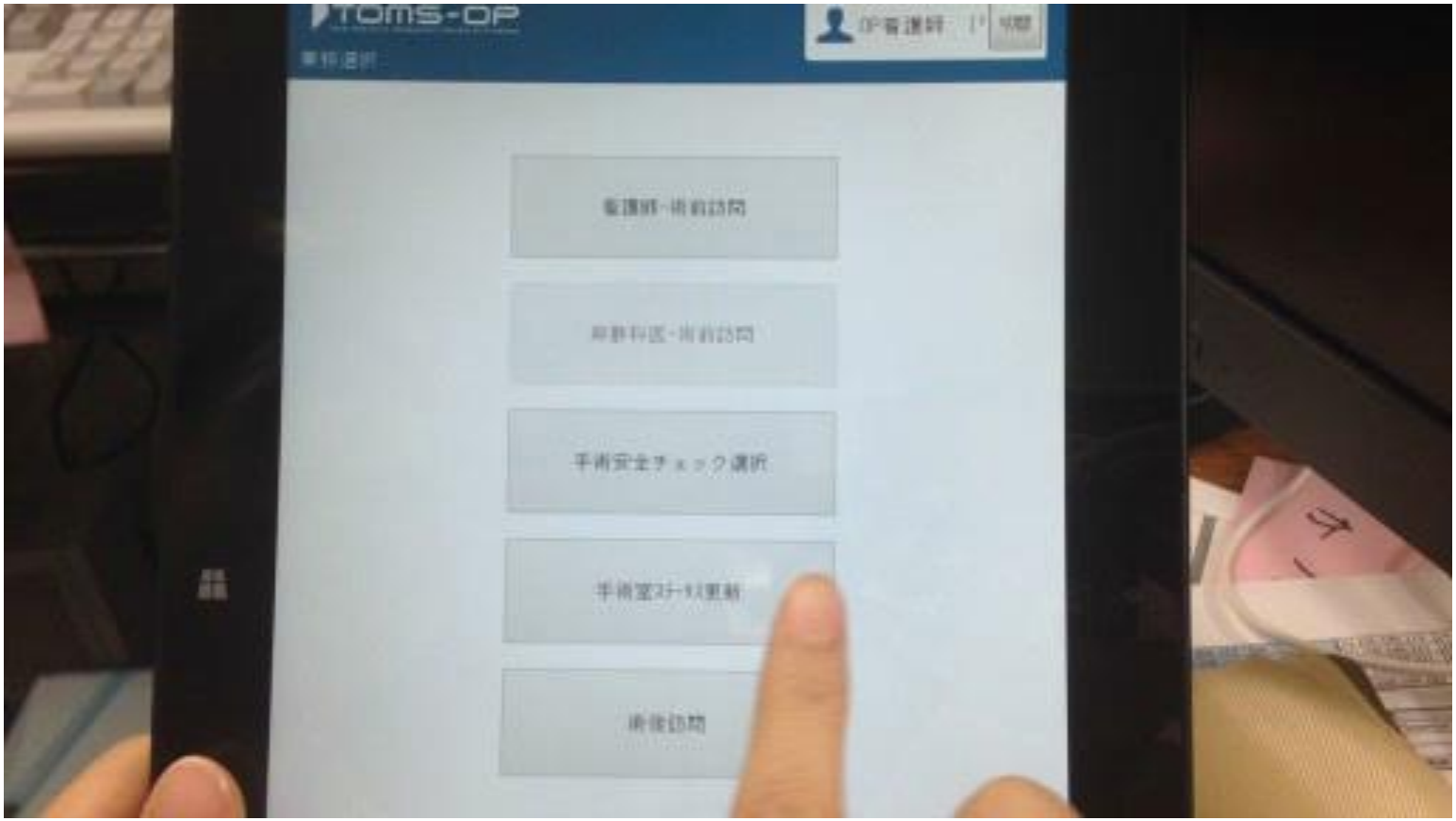


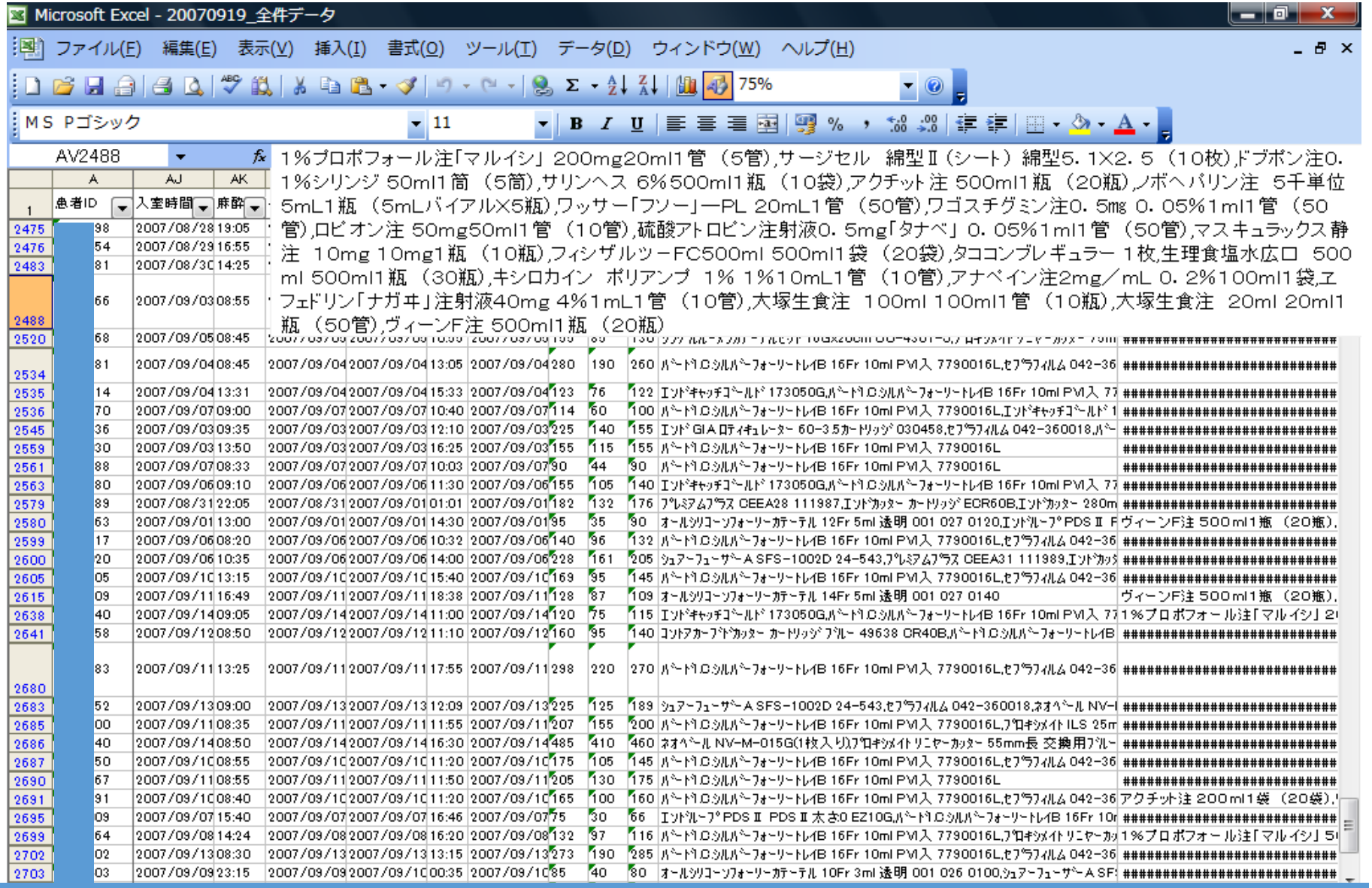
TOMS®



新しい手術業務支援システムTOMS®

タブレットの効果的な使用



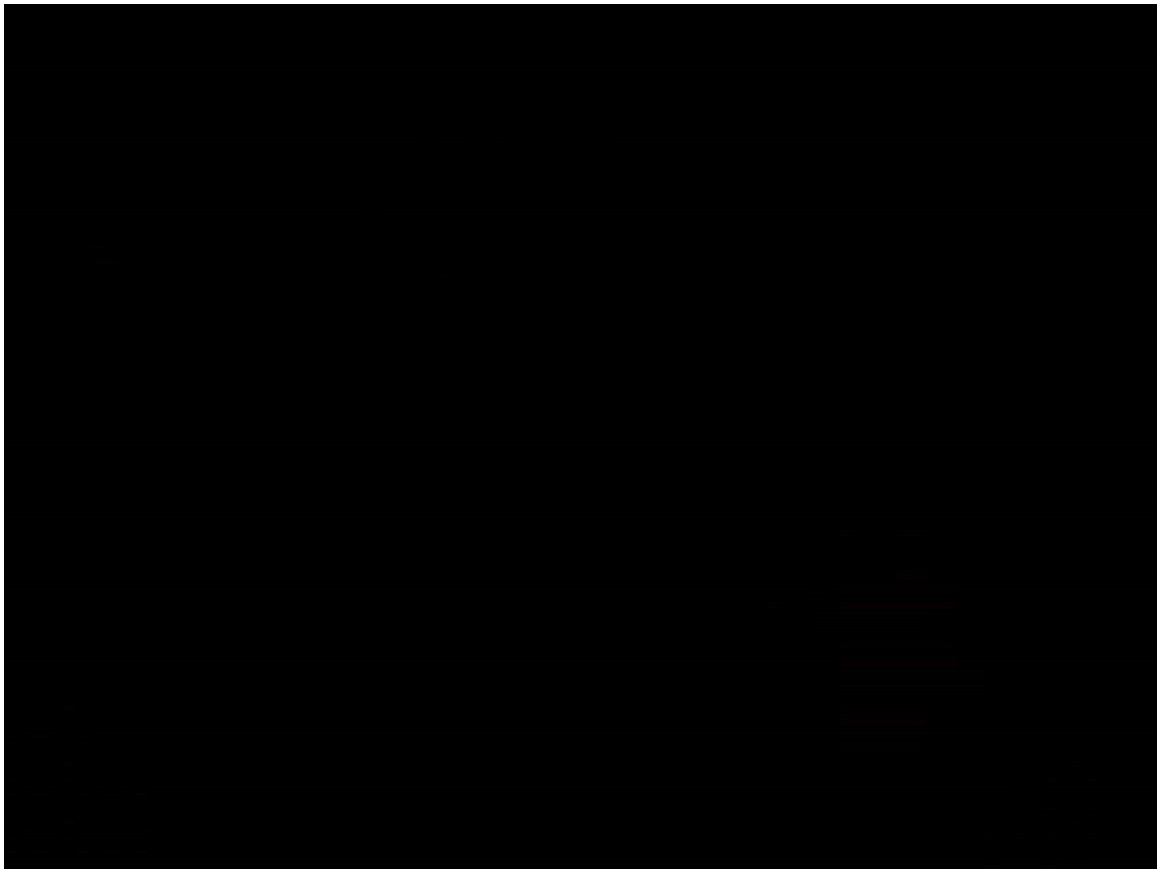


Basic reports like as monthly and daily reports and operation data can be output as CSV format files. This will enable data analysis of used medications and devices for each operation.

Intensive care unit (ICU)

In the Intensive care unit, small ampule picker was installed, which was located at each bed-side in ICU. At use medication, nurses just only pick up ampules and vials from lane, all usage data; usage time, quantity, type of medication, are storaged and reflected to the distribution system only after the actual use.

Emergency center



Similar picking machine is installed at emergency center(ER) all usage data are straged and reflected to the distribution system only after the actual use.

Picking assist system via handy terminal

List of picking

PD（膵頭十二指腸切除術）

麻酔	全身麻酔＋硬膜外麻酔
体位	仰臥位
器材	Eメス・エコー・ハーモニック・吸引②
術野に出す薬品・薬液	生食・イソジン・サージセル・ボルヒール・アクリノール液
その他	吊り上げ鉤の棒
必要物品（ ）は必要時	【サプライ】 ・鉗子立て　・ライトハンドル ・吊り上げ鉤　・ｶﾞｲﾎﾟｰﾗｸﾞﾗｰﾑﾎﾟｰﾙ ・E刃②　・E刃先長 ・脳ベラ　・血管ブルドック ・あられ用パッド　・エコーT型 ・ハーモニックⅡ（コード・レンチ） ・アドソンペピー　・やわらかポジッソ （・留置時針器）　（・ﾍﾓｸﾘｯﾌﾟ鉗子、ｸﾘｯﾌﾟ） （・おにぎり②）　・ｼﾘｺﾝﾁｭｰﾌﾞNo３、No４ （・ミクリッツガーゼ） ・ブルドック　・メッツェンバーム ・ﾒﾃﾞｨｺｯﾄ短ﾍﾟｱﾝ　・肝切８点ｾｯﾄ 【中滅】 コンテナ） 【器材庫】 ・№２２、11 メスﾘ②　・外科・耳鼻科針セ ・ﾏﾆﾌﾟﾗｰ　・大穴ｼｰﾗﾝ ・ヤンカー②　・鋼棒② ・Xｶﾞｰｾﾞ５束③、３束②　・１枚ｶﾞｰｾﾞ① ・折りｶﾞｰｾﾞ④　・血管テープ各種② ・メスクリーナー　・血管タニケット ・１（５０）② ・１（７５）② ・２－０（５０）⑤（⑩） ・２－０（７５）③（⑤） ・黒糸（７５）① ・３－０ナイロン①（②） ・３－０リタッチ② ・３－０ﾊﾞｲｸﾛﾙ（Ｊ３１１）箱ごと ・４－０ﾊﾞｲｸﾛﾙ　箱ごと ・４－０ﾓﾉｿﾞﾙﾄ

AIDC is useful not only for data-storage of consumption, but also for preparation

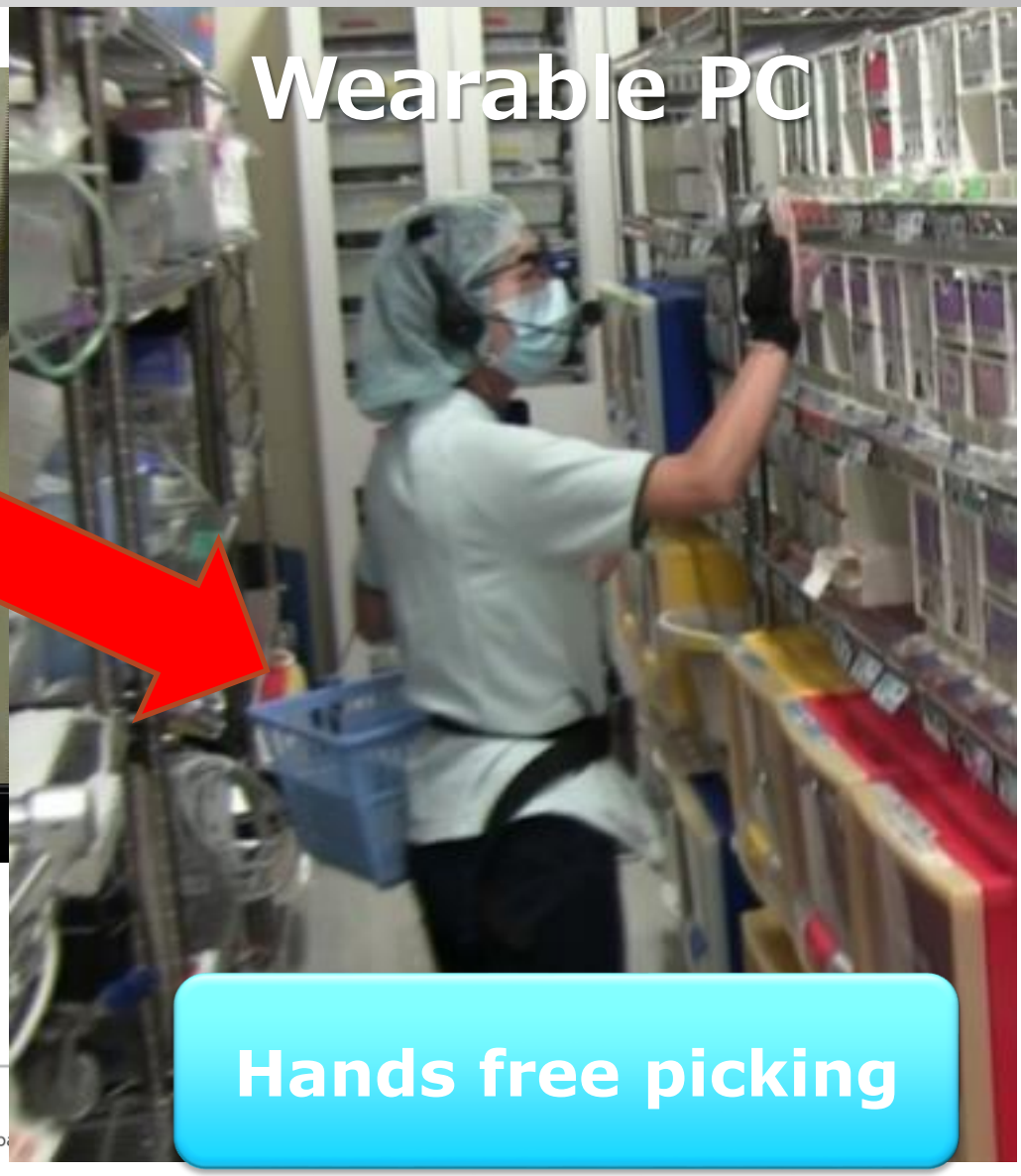
Manual Picking

Check with paper sheets

ピッキングミスが激減

Picking assist system by using wearable PC

Picking assist system by using wearable PC



Utilization of data Strict data storage

- ***Data analysis of distribution system data is so important.***
- ***Management data is made from strict storage data.***
- ***For effective use of ICT system, labor saving of stuffs should make by using systems***

AIDC is useful and necessary

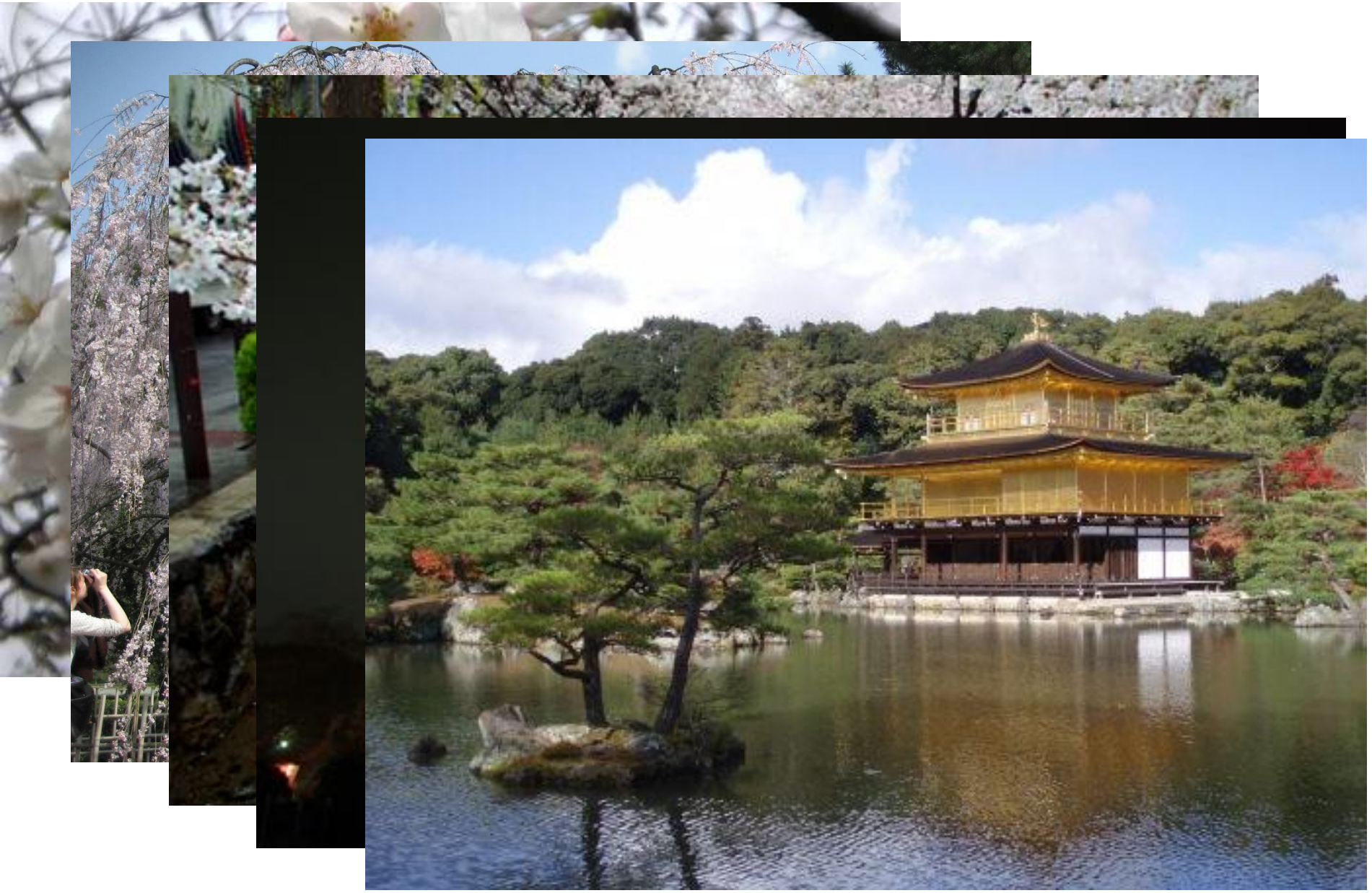
Also staffs can utilize the data stored in these systems by using GS1 and Another unified codes, which is about the number of given injections for each day, or the busiest time of a day.
This information is very useful for understanding exact trend of the workload, and management of the organization.

GS1 is useful and necessary

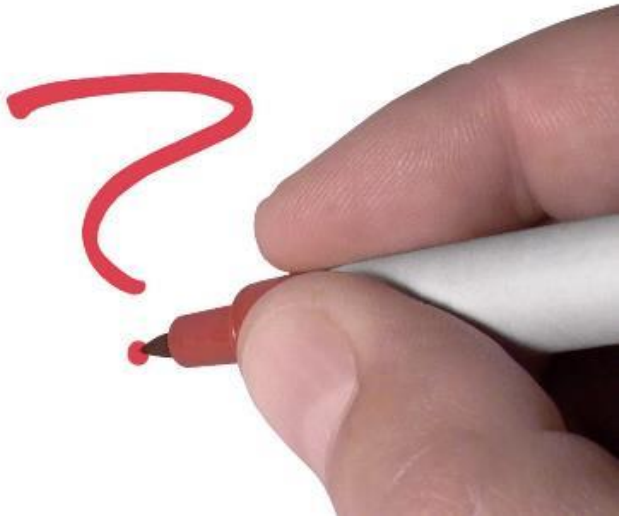
Also staffs can utilize the data stored in these systems by using GS1 and another unified codes, which is about the number of given injections for each day, or the busiest time of a day.
This information is very useful for understanding exact trend of the workload, and management of the organization.

We believe that computerization at hospitals should be beneficial for patients.
So adding nursing functions to EMR that is usually made for doctors can be a big help to establish medical systems that benefits patients.

Beautiful sights at Kyoto wait for your coming !!!



HPAC Questions and contact details



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