



# GS1 Global Healthcare Conference - Mexico

*CASE STUDY:*

**'Innovative National Traceability in Healthcare  
using GS1 Standards'**



*HSE ICT – Pauline Biggane*

*21<sup>st</sup> April 2015*

# HSE Overview



## Health Service Executive:

**Population:** 4.6 million (Republic)

**Staff:** 100,000

**Budget:** €13 billion

**Hospitals:** 52 Acute Hospitals

**CDUs:** 48

**ERUs:** 32

*CDU = Central Decontamination Units*

*ERU = Endoscope Reprocessing Units*



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# HSE ICT Overview



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**Director General**  
Tony O'Brien

**Chief Information Officer**  
Richard Corbridge

**ICT - Delivery Director**  
Seamus Butler

**ICT Project Manager for  
RIMD/Endoscope Track and Trace**  
Pauline Biggane

# In the news....



July  
2013

## THE IRISH TIMES

### Helpline for patients with CJD concerns attracts 1,300 calls

Fri, Jul 19, 2013, 15:39

Between 10 and 20 patients operated on with instruments used on patient with disease



**“The HSE will contact up to 20 patients who were operated on using instruments which had been used on a patient who has been diagnosed with CJD disease”**

**Track  
and  
Trace?**



The HSE will contact up to 20 patients were operated on using instruments which had been used on a patient who has been diagnosed at Beaumont Hospital with Creutzfeldt-Jakob (CJD) disease Photograph: Dara Mac Dónaill/The Irish Times



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# In the news....



July  
2013

## Crumlin hospital apologises for contamination scare



Thursday 25 July 2013 22.21



**“Hospital has apologised to 18 families who were wrongly identified as being at the centre of a contamination scare over a medical scope”**

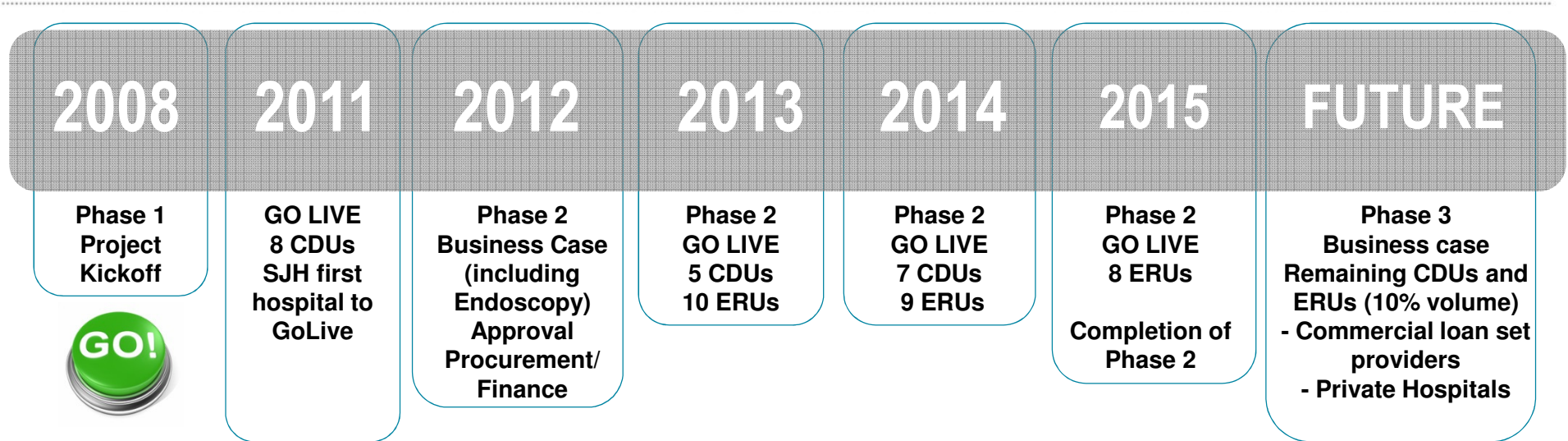


Our Lady's Children's Hospital, Crumlin has apologised to 18 families who were wrongly identified as being at the centre of a contamination scare over a medical scope.

Track  
and  
Trace?



# Decontamination Track and Trace - Timeframe



- Only National Traceability Solution (Instrument trays and endoscopes) in the world
- 90% of volume will be utilising the solution by end of Phase 2 in 2015 (32 Hospitals)
- Patient Safety was the key reason for implementation :

***Clinical imperative to have traceability for high risk procedures***

# Overview of Instrument Set Traceability

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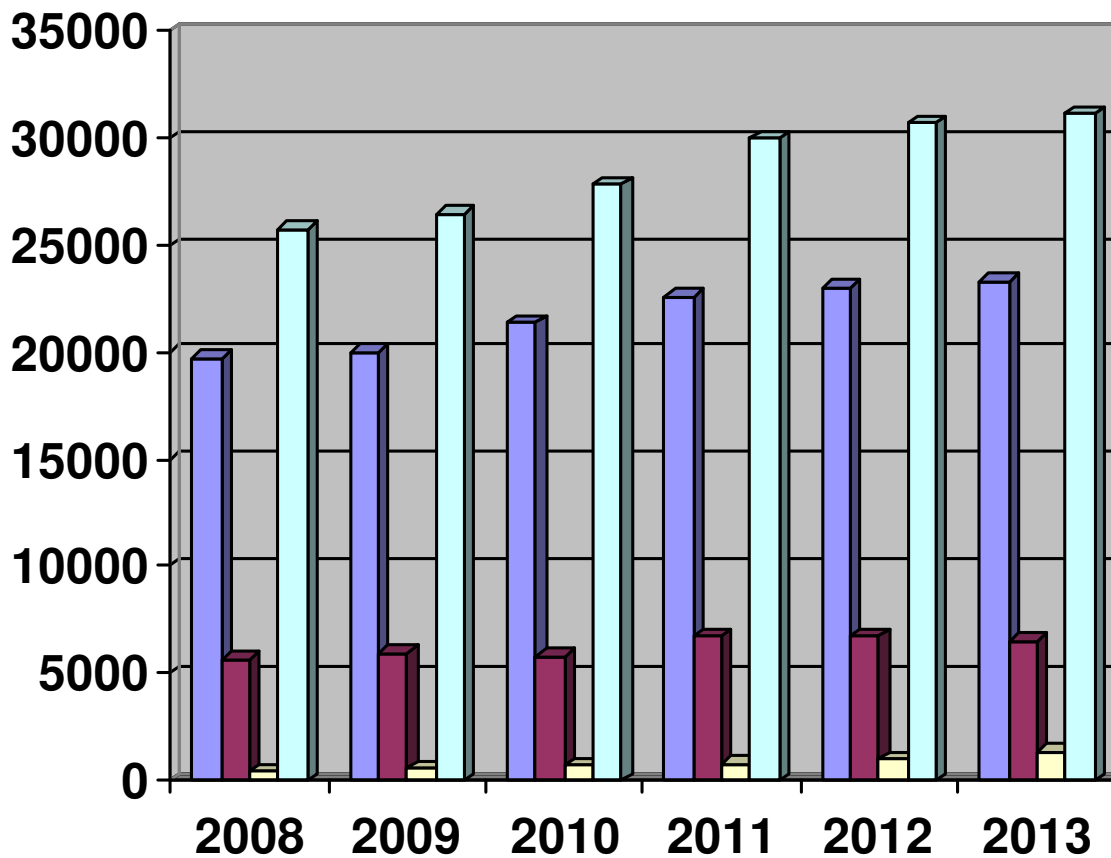


“Systems should be in place to record the decontamination process used on RIMD (tracking) and link them with service users on which they have been used (tracing)”

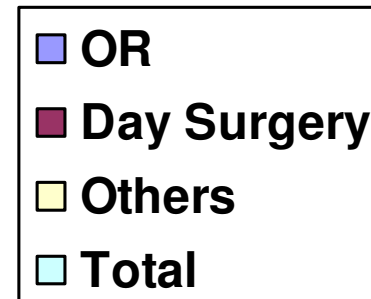
HSE Recommended Practices for Central Decontamination Units. Version 2.0, 2011

Project started in May 2008 – 1<sup>st</sup> “Go Live” site was St. James’s Hospital in July 2011

# Innovative National Traceability in Healthcare using GS1 Standards



**21% Increase in workload with less staff**



***Anecdotal evidence:  
Moved from 5,000  
Transcriptions per day  
in one hospital***



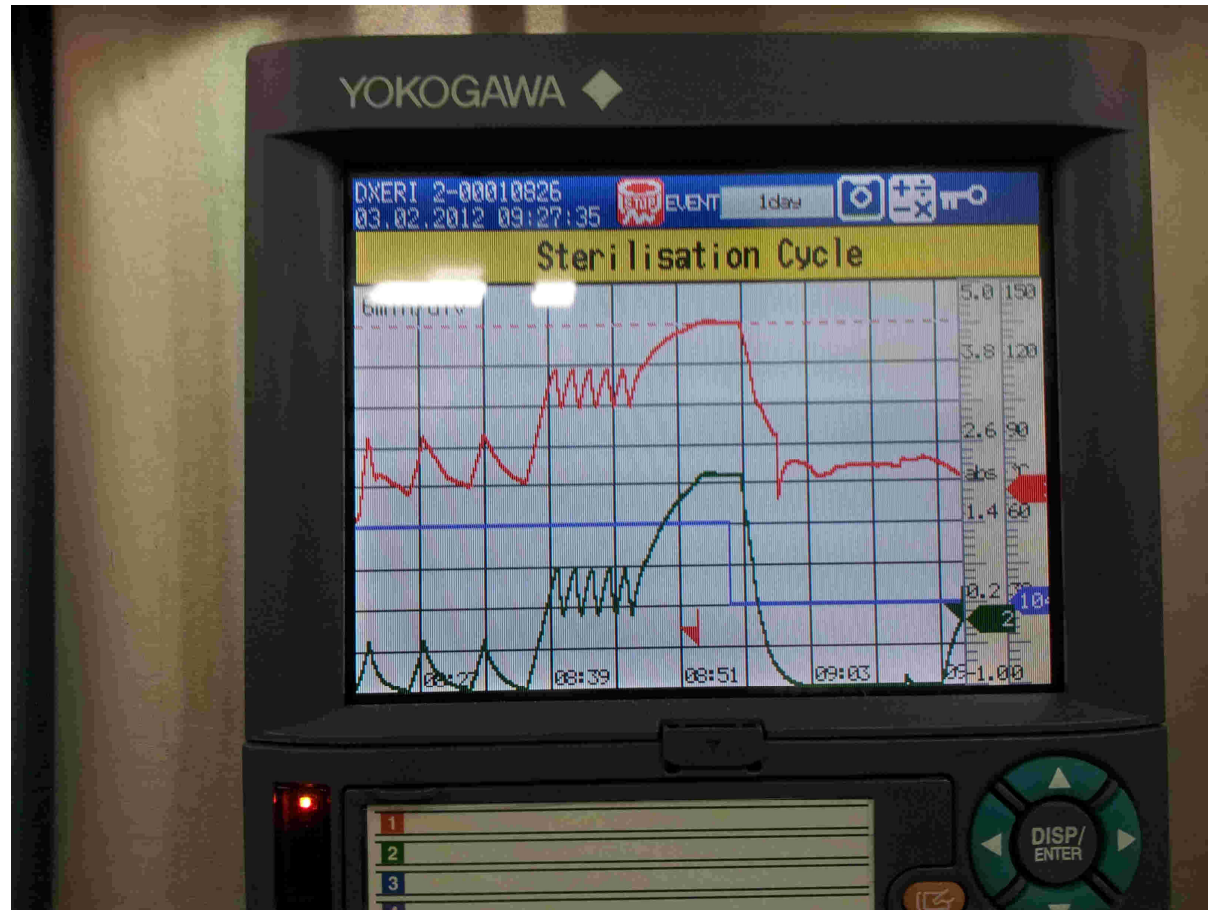


# Tracking Stations



## New Equipment

# Dataloggers



**Linked to Tracking system**

# Tracking Instruments - Before



## Manual Check

# Tracking Instruments - After



Barcode	User Code	Description	Quantity	Date In	Time In	Loaded By
▼ Washer : 1						
6000010	N/A	CONTAINERS		1 11/04/2012	14:00:57	AGNES
▼ Washer : 3						
100418500009	500	RHINO & SMR SET (PLASTICS)-02		1 11/04/2012	14:19:54	PAUL R
100377400043	59	CABG SET-05		1 11/04/2012	14:19:36	PAUL R
100293700031	3262	BARRE INSTRUMENTS SET		1 11/04/2012	14:17:01	PAUL R
100387500031	3322	BOOKWALTER RETRACTOR SET 2-02		1 11/04/2012	14:17:01	PAUL R
100302000011	3525	FINE STILLE OSTEOTOMES (TH 384)		1 11/04/2012	14:16:58	PAUL R
100368000029	3099	GYNAE ONCOLOGY SET-05		1 11/04/2012	14:16:52	PAUL R
100287700046	517	ABDOMINAL HYSTERECTOMY SET-01		1 11/04/2012	14:16:48	PAUL R
100322800049	3520	OPEN UROLOGY SET		1 11/04/2012	14:16:45	PAUL R

## Information available:

- **Electronically & Post -event**

# Instrument Set Lists - Before



**Paper based**


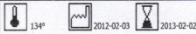
# Instrument Set Lists - After



**Electronic, file printed when Tray is scanned  
No need to search and certainty of document version**



# Eg: Printed Checklist

 100296200002 Version No. 0000 Printed On: 03/02/2012 09:22:54		<b>LOT</b> <b>00002</b> User Code <b>80</b>	<b>ST JAMES'S HOSPITAL DUBLIN</b> THEATRE 1 <b>CHAUX RETRACTOR CARDIAC-01</b>						
Qty		Check	Description	Qty	Check				
Tot	Mix				Act	2	3	4	5
2			SIDE ARM	2					
1			INTERLOCKING BRACKET WITH MAIN ARM ATTACHED 34-1150	1					
1			INTERLOCKING BRACKET WITH HOLE FOR KEY	1					
2			SCREW	2					
1			TIGHTENING KEY	1					
2			BLADE	2					
		Place A Tick In The Box As Required							
9 Items In This Set.									
Clean Room (Check 1)				Theatre Number					
Sign		Date		Date Used					
		/ /				Hospital Reg. No.			
Wash Room (Check 5)									
Sign		Date							
		/ /							
Scrub Nurse Sign	Check 2		Check 3		Check 4				
Circ. Nurse Sign	Check 2		Check 3		Check 4				



# Process Log - Before



**St. James's Hospital**

R190

DATE	NAME OF SET	THEATRE	LIST OF INSTRUMENTS	SIGNATURE
2/6/11	Radial Set no (235)	T		DeLantoni
	BASIC VAS 437	T		Rumsey
	MINOR ORTHO 115	T		Althelia
	Cardiac Set 46	T		Eileen Healy
	Micro Air Dull Reamer 2963	T		John
	Medom Hyster 510	T		DeLantoni
	BASIC VAS 438	T		Rumsey
	MINOR ABDOM 282	T		Rumsey
	Basic Hip 3332	T		Eileen Healy
	Sternum Saw 3238	T		Eileen Healy
	UNGRADED TIBIAL NAIL 172	T		Althelia
	INTESTINAL 321	T		Althelia
	THORACOSCOPY 613	T		Rumsey
	Basic Plastic 357	T		E Healy
	GENERAL PLASTIC 294	T		Althelia
	GENERAL PLASTIC 292	T		Althelia
	MASON ABDOMINAL 306	T		John
	Basic Plastic 354	T		Eileen Healy
	HELIANASCOPY 2316	T		Rumsey
	VEINS SET 499	T		Althelia
	Aiming Device / Radiolucent 3201	T		John
	Basic PLASTIC 3145	T		Rumsey
	CASG 724	T		Althelia
	Basic Plastic 319	T		E Healy
	THORASCOPY 2315	T		Althelia
	MAT ABDOM 304	T		Rumsey
	MICRO NERVE 3769	T		Althelia
	Micro Air Dull 2963	T (4)		John
	COMPACT AIR DOME 1871	T		Althelia

**Paper based**



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# Process Log - After

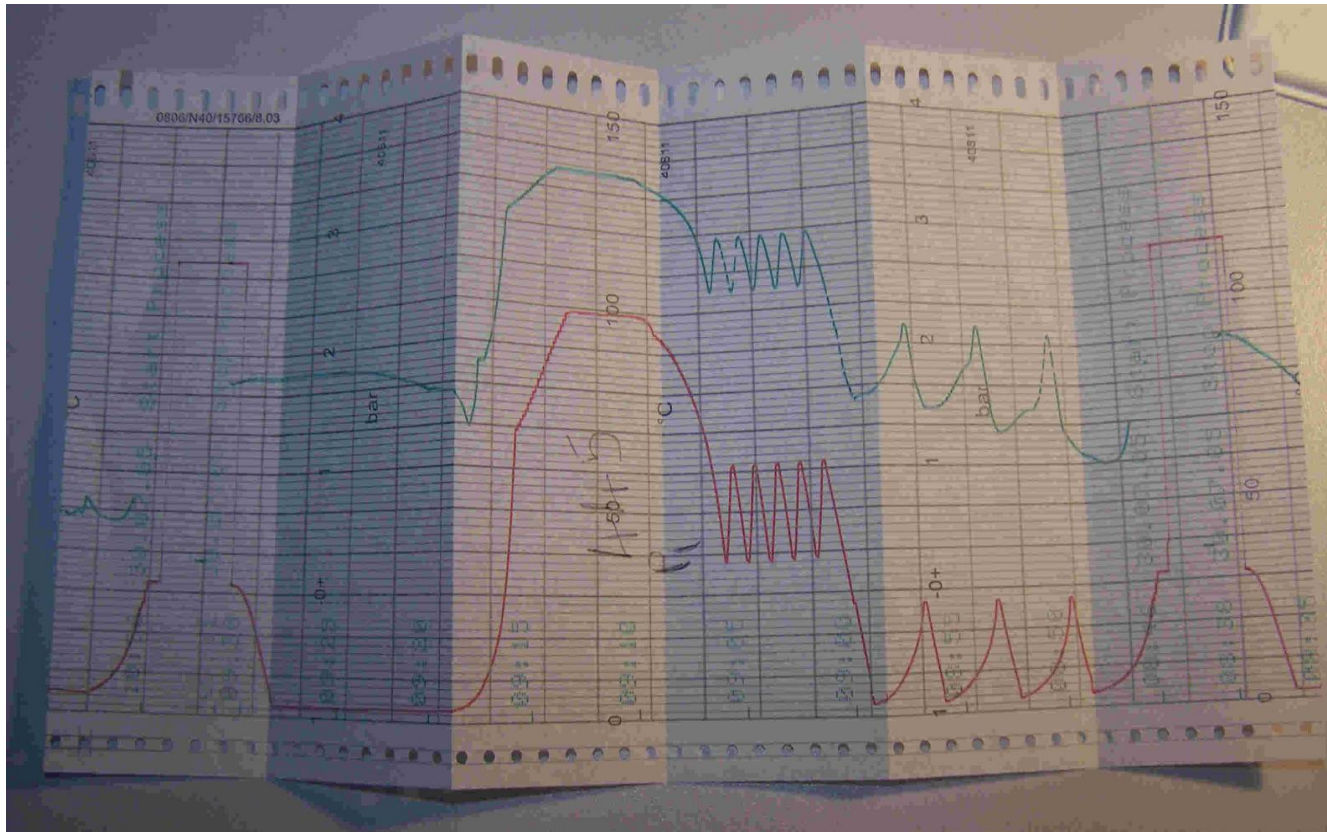


From : 05/04/2012				ST JAMES'S HOSPITAL DUBLIN	
To : 05/04/2012					
01:Packing Detail					
Unknown Type					
Barcode	UserCode	Operator	Date In	Time In	Description
100398700044	531	EILEEN H	05/04/2012	08:13:31	GYNAE LAPAROSCOPY SET-01
100458400011	2772	LINDA R	05/04/2012	08:54:05	30° LENS 4MM WOLF 433424 DSC
100457900012	2130	LINDA R	05/04/2012	09:01:13	0° LENS 4MM WOLF 427581 DSC
100458500018	2781	LINDA R	05/04/2012	09:05:31	30° LENS 4MM WOLF 433413 DSC
100460500024	4030	LINDA R	05/04/2012	09:08:52	HYSTEROSCOPE & SHEATH 5000193167 DSC
100303600088	2609	EILEEN H	05/04/2012	10:41:07	GENERAL LAPAROSCOPY SET NEW-01
100455100026	3768	LINDA R	05/04/2012	10:44:50	0° LENS 10MM WOLF 5000171714 DSC
100375400073	2938	PAUL R	05/04/2012	11:42:50	GENERAL LAPAROSCOPY SET NEW-06
100452500029	3195	ANTHONY C	05/04/2012	12:11:05	0° LENS 5.3MM WOLF 468796
100454900009	3177	LINDA R	05/04/2012	14:15:57	30° LENS 10MM WOLF 436023 DSC
100475700020	6024	LINDA R	05/04/2012	14:16:29	0° LENS 5MM STORZ 1127861 DSC
100375200071	2936	DOROTA S	05/04/2012	14:31:34	GENERAL LAPAROSCOPY SET NEW-04
100321000006	2393	JOSEPHINE D	05/04/2012	17:12:41	NEPHROSCOPE
100453000042	3194	DEIRDRE C	05/04/2012	17:29:14	30° LENS 10MM WOLF 457074
100452400009	3304	DEIRDRE C	05/04/2012	17:33:15	0° LENS 5MM STORZ 930600
100416900029	3889	JOSEPHINE D	05/04/2012	17:36:06	URETEROSCOPE STRAIGHT TH 10 & 11-04
100453200048	3677	DEIRDRE C	05/04/2012	17:38:59	30° LENS 10MM WOLF 5000145118
100328200015	879	JOSEPHINE D	05/04/2012	17:42:33	WOLF LITHOCLAST FULL SET
100465500034	6000	DEIRDRE C	05/04/2012	17:44:08	30° LENS 4MM ACMI 739453
100453100047	3676	DEIRDRE C	05/04/2012	17:48:29	30° LENS 10MM WOLF 5000145117

Number Of Items : 20

**Electronic & Legible  
Post-event – Can be retrieved at the touch of a button**

# Steriliser Cycle Record - Before



**Paper based  
Subject to deterioration over time**

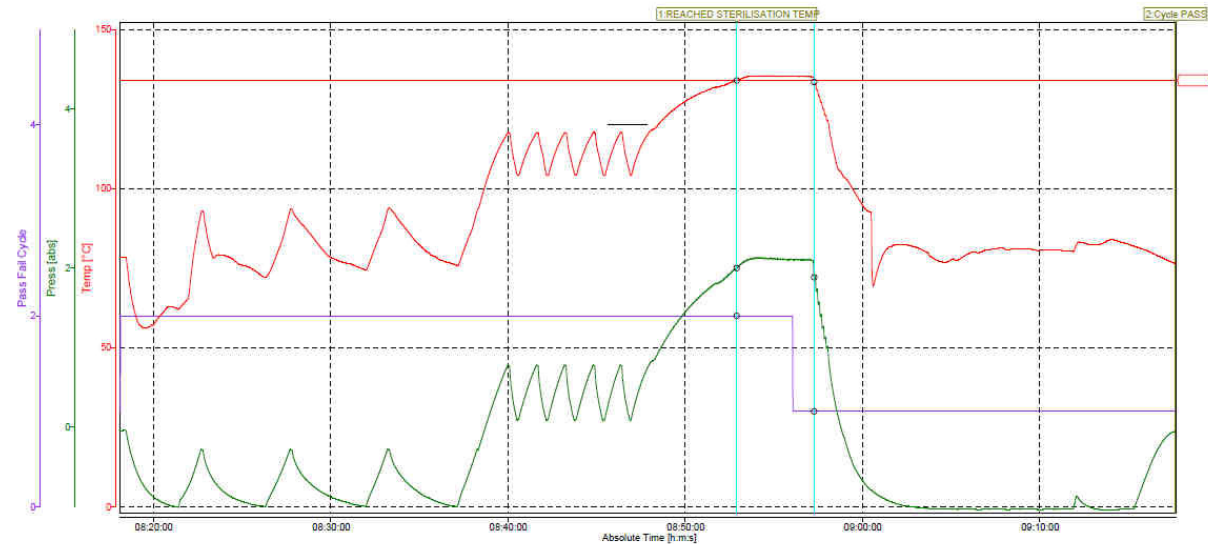
# Steriliser Cycle Record - After



File Name : 001755\_DXERI 2-00010825.DAE  
 Device Type : DX1000  
 Batch No. : DXERI 2  
 Lot No. : 00010825  
 Printed Group : STERILISER 2  
 Printed Range : 2012/02/03 08:16:08.000 - 2012/02/03 09:17:40.000  
 Comment : STERILISER CYCLE - PASS

Start Time : 2012/02/03 08:16:08.000  
 Stop Time : 2012/02/03 09:17:40.000

	Cursor A	Cursor B	Difference
Data No.	2087	2349	262
Absolute Time	2012/02/03 08:52:56.000	2012/02/03 08:57:17.000	00:04:22.000
Tag No.	Value A	Value B	Value B-A
Temp[°C]	134.0	133.5	-0.5
Press[abs]	2.000	1.886	-0.115
Pass Fail Cycle	2	1	-1



**Electronic Post-event – Can be retrieved at the touch of a button**

# Tracking in Theatres - After



## Document List Report

Document Number: T200242		Patient ID: 1087474	Theatre: THEATRE 2
Document Created By %JESSIE S	Date & Time Created 02/02/2012 14:14:23	Amendments	
Code: 1003567 Lot No: 00035 Quantity: 1 Operator: %JESSIE S	Type: TRACKER Item: BASIC CARDIAC SET-04 Supplier: STERILE SERVICES Remarks:		
Code: 1003774 Lot No: 00033 Quantity: 1 Operator: %JESSIE S	Type: TRACKER Item: CABG SET-05 Supplier: STERILE SERVICES Remarks:		
Code: 1004160 Lot No: 00027 Quantity: 1 Operator: %JESSIE S	Type: TRACKER Item: CARDIAC MAMMARY RETRACTOR-03 Supplier: STERILE SERVICES Remarks:		
Code: 1003741 Lot No: 00049 Quantity: 1 Operator: %JESSIE S	Type: TRACKER Item: STERNAL SAW BATTERY POWERED-01 Supplier: STERILE SERVICES Remarks:		
			Number Of Items: 4

## Electronic

- Post-event – Can be retrieved at the touch of a button
- Linked to instrument tracking system

Document Number: T200243		Patient ID: 1087474	Theatre: THEATRE 2
Document Created By %JENNIFER I	Date & Time Created 02/02/2012 15:29:26	Amendments	
Code: 1002962 Lot No: 00001 Quantity: 1 Operator: %JENNIFER I	Type: TRACKER Item: CHAUX RETRACTOR CARDIAC-01 Supplier: STERILE SERVICES Remarks:		
			Number Of Items: 1
			Total Items: 5

# Example of Incident Investigation



From : 25/09/2012  
To : 01/10/2012

ST JAMES'S HOSPITAL DUBLIN

## EXAMPLE OF INVESTIGATING A PROBLEM WITH A SET - SEAL TAGS

Date	Time	Code	Operator	Description	Machine	Cycle	Status
25/09/2012	07:30:06	100412800058	ANDREW	PROF. REYNOLDS' INSTRUMENT SET-03	0	0	DIRTY RETURNS
25/09/2012	08:48:18	100412800058	RAJAN D	PROF. REYNOLDS' INSTRUMENT SET-03	1	7901	WASHER LOAD
25/09/2012	09:51:29	100412800058	CAROLINE F	PROF. REYNOLDS' INSTRUMENT SET-03	1	7901	WASHER UNLOADED
25/09/2012	10:41:38	100412800059	DOROTA S	PROF. REYNOLDS' INSTRUMENT SET-03	0	0	PACKING 1st SCAN
25/09/2012	10:48:25	100412800059	SEAMUS L	PROF. REYNOLDS' INSTRUMENT SET-03	2	11958	AUTOCLAVE LOAD
25/09/2012	11:47:07	100412800059	SEAMUS L	PROF. REYNOLDS' INSTRUMENT SET-03	2	11958	AUTOCLAVE UNLOAD
25/09/2012	11:47:07	100412800059	SEAMUS L	PROF. REYNOLDS' INSTRUMENT SET-03	2	11958	ISSUED OFFSITE
01/10/2012	15:29:53	100412800059	RUTH D	PROF. REYNOLDS' INSTRUMENT SET-03	0	0	ISSUED OFFSITE
01/10/2012	20:27:07	100412800059	CATHAL O C	PROF. REYNOLDS' INSTRUMENT SET-03	0	0	CREDIT



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# Loan Sets



## The Big Challenge !!

- Shared among hospitals (contents always changing)
- Traceability is very challenging

# Loan Set Checklists - Before



H.S.S.U. INSTRUMENT CHECKLIST - OPERATING THEATRE

SET NAME: Pinnacle Set (Tray 1)

Check 1	# of items	NAME OF ITEM	Check					Set No.
			2	3	4	5		
		<b>Trial Cup Instruments</b>						
1	1	Pinnacle acetabular cup trial 48mm 221701048					Packing & Control	
1	1	Pinnacle acetabular cup trial 50mm 221701050					Check 1	
1	1	Pinnacle acetabular cup trial 52mm 221701052						
1	1	Pinnacle acetabular cup trial 54mm 221701054					Sign:	
1	1	Pinnacle acetabular cup trial 56mm 221701056					Date:	
1	1	Pinnacle acetabular cup trial 58mm 221701058						
1	1	Pinnacle acetabular cup trial 60mm 221701060					Decontaminator	
1	1	Pinnacle acetabular cup trial 62mm 221701062						
1	1	Pinnacle acetabular cup trial 64mm 221701064					Check 5	
1	1	Pinnacle acetabular cup trial 66mm 221701066						
1	1	Pinnacle straight impactor 221750041					Sign	
1	1	Quickset ratchet screw driver handle 227402000					Theatre Number	
1	1	Quickset ridged tapered hex screw driver 227447000						
1	1	Green impactor tip 28mm 221750006					Date Used	
1	1	Blue impactor tip 32mm 221750007					Hospital Reg. No	
1	1	Orange impactor tip 36mm 221750008						
1	1	Celamie Suction Cup 221700020					Scrub Nurse Sign:	
1	1	Insulated Suction tip for cel cup 959910000					Check 1	
		Insulated Version guide (2 pieces) 221750014					Check 2	
		Heads:					Check 3	
1		28 Green +1.5					Circ. Nurse Sign:	
1		28 Brown +5						
1		28 Blue +8.5					Check 1	
1		28 Black +12						
1		32 Green +1					Check 2	
1		32 Brown +5						
1		32 Blue +9					Check 3	
1		32 Black +13						
1		36 Green +1.5						
1		36 Brown +5						
1		36 Blue +8.5						
1		36 Black +12						
		36 Light Brown -2						

- Paper based  
- No certainty that list matched tray contents



# Loan Set Checklists - After



Qty	Description	Qty	Check
0	STANDARD INSTRUMENTS:	0	
1	HANDLE MEDIUM WITH QUICK COUPLING	1	
1	DEPT GAUGE	1	
1	DEPT GAUGE	1	
2	PLIERS FLAT NOSED	2	
1	SCREW HOLDING FORCEPS	1	
1	BENDING CUTTING PLIERS	1	
0	ADDITIONAL INSTRUMENTS:	0	
1	SHARP HOOK	1	
1	REDUCTION FORCEPS WITH POINTS	1	
1	HOLDING FORCEPS WITH SWIVEL FOOT	1	
1	SMALL REDUCTION FORCEPS	1	
1	REDUCTION FORCEPS	1	
1	SMALL BONE LEVER	1	
1	SMALL BONE LEVER	1	
1	PERIOSTEAL ELEVATOR	1	
1	DOUBLE GUIDE IN TRAY	1	
1	DRILL LOCKING SLEEVE	1	
0	COMPACT HAND 1.5 TITANIUM IMPLANTS & INSTRUMENTS:	0	
1	COUNTERSINK	1	
1	DRILL BIT 1.1MM	1	
1	DRILL BIT 1.5MM	1	
1	SCREWDRIVER SHAFT AND HOLDING SLEEVE	1	
1	DOUBLE DRILL GUIDE	1	
1	COMPACT HAND 2.0 LCP TITANIUM IMPLANTS & INSTRUMENTS	1	
0	TOP TRAY:	0	
1	COUNTERSINK	1	
1	DRILL BIT SHORT 1.5MM	1	
1	DRILL BIT LONG 1.5MM	1	
1	DRILL BIT 2.0MM	1	
1	SCREWDRIVER SHAFT STARDRIVE SHORT	1	
0	BOTTOM TRAY:	0	
1	UNIVERSAL DRILL GUIDE	1	
1	SCREWDRIVER SHAFT STARDRIVE & HOLDING SLEEVE	1	
1	LCP DRILL SLEEVE	1	
1	LCP BENDING PIN	1	

Place A Tick In The Box As Required

DO NOT USE IF PACKING DAMAGED  
STORE IN A CLEAN, DRY, DUST FREE ENVIRONMENT

USER CODE: SE100219  
PAGE: 1 of 2  
LOT: 00001

- Electronic
- Fully Legible
- Up to date
- List can be pulled from MS1 database just by scanning the tray





# Loan Set – Example

## 1 Hospital during 1 week in Feb 2015



Which loan set would you rather process?

H.S.S.U. INSTRUMENT CHECKLIST - OPERATING THEATRES

Triathlon Knee					Set No.
Check	# of	NAME OF MEDICAL DEVICE	Check		
1	Set		2	3	4
		Tray 2 - Miscellaneous			
1	1	Curved osteotome 8541-4-710	1	1	1
		Check 1 HSSU			
1	1	Chisel 8541-4-759	1	1	1
		Clean Room			
1	1	Slip hammer 8541-4-883	1	1	1
		Wash Room			
1	1	Balancer 8541-4-810	1	1	1
2	2	Impactor handle 8541-4-815	2	2	2
		Day 34-2-15			
1	1	Personal impactor / extractor 8541-4-887	1	1	1
		Check 5 HSSU			
1	1	Tibial base plate extractor / impactor 8541-4-855	1	1	1
		Wash Room			
1	1	Tibial impactor 8541-4-812	1	1	1
		Wash Room			
1	1	Tibia insert impactor 8541-4-813	1	1	1
		Wash Room			
1	1	Imp jig 8541-2-820	1	1	1
		Day 1/1/15			
1	1	S Rettractor 3410-01	1	1	1
		Day 25-2-2015			
1	1	Tray Rettractor 104001	1	1	1
		Day 01/15/15			
		Theatre Number 1			
		Date Used 25/2/15			
		Hospital Reg. No. 0175919			
		Scrub Name Sign			
		Check 2 C. Ross			
		Check 3 C. Ross			
		Check 4 C. Ross			
		Clin. Nurse Sign J. Ross			
		Check 2 J. Ross			
		Check 3 J. Ross			
		Check 4 J. Ross			



### Not GS1 Coded

- 30 loan sets
- 60 reprocesses
- Huge paper trail
- Manual tracking
- Very time consuming
- Manual rekeying and transcription of data



**Not GS1 Coded**

### GS1 Coded

- 4 loan sets
- 8 reprocesses
- Huge paper saving
- Electronic tracking
- Very time efficient
- Unique identification of set (GS1 barcode)



ST JAMES'S HOSPITAL DUBLIN

LOT 00002  
Ortho Theatre Navan  
SET01058  
TRIATHLON KNEE SET 2 TRAY 3 TIBIAL PREP

Qty	Description	Product ID	Lot	Check	1	2	3	4	5
1	TIBIAL ALIGNMENT ANGLE TEMPLATE (2 PARTS)								
1	SPIKED PROXIMAL ROD								
1	#3 TIBIAL TEMPLATE								
1	#4 TIBIAL TEMPLATE								
1	#5 TIBIAL TEMPLATE								
1	#6 TIBIAL TEMPLATE								
1	#7 TIBIAL TEMPLATE								
1	TIBIAL ADJUSTABLE HOUSING_3 DEGREE SLOPE								
1	TIBIAL ADJUSTABLE HOUSING_0 DEGREE SLOPE								
1	TIBIAL RESECTION GLIDER RIGHT								
1	TIBIAL RESECTION GLIDER LEFT								
1	SAW CAPTURE LEFT								
1	SAW CAPTURE RIGHT								
1	TIBIAL STYLUS								
1	SIZE 1-3 KNEE PUNCH TOWER								
1	SIZE 4 TO 8 KNEE PUNCH TOWER								
1	SIZE 1 TO 3 KNEE PUNCH								
1	SIZE 4 TO 6 KNEE PUNCH								
1	SIZE 7 TO 8 KNEE PUNCH								
1	TIBIAL ALIGNMENT HANDLE								

Place A Tick In The Box As Required

20 Items In This Set

Clean Room (Check 1) Theatre Number  
Wash Room (Check 5) Date Used  
Scrub Name Sign Hospital Reg. No.

ST JAMES'S HOSPITAL DUBLIN

TRIATHLON KNEE SET 2  
TRAY 3  
TIBIAL  
PREP

ID 1005366 LOT 00002

ORTHOTHEATRE NAVAN  
TRIATHLON KNEE SET 2 TRAY 3  
TIBIAL  
PREP

ID 1005366 LOT 00002 USER CODE SET01058 2015-03-05 2016-03-04

2015-03-05

**GS1 Coded**

# Key Benefits

## *Innovative National Traceability in Healthcare using GS1 Standards*

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### Automatic Tracking of Instrument Sets

- » No longer need to stick head in the washer

### Much easier to share Loan Sets

- » Interoperability between hospitals
- » Lists more accurate and legible

### Tray Checklists printed when scanned

- » Accurate and right version, no longer need to search

### All records stored digitally

- » Can be referenced post-event, huge paper saving

### Link between tracking system and theatre

- » Closes the link between patients and sets reprocessed

### Improved Workflow

- » Scanning of instrument sets mean team has to communicate and be more organised

### Reporting

- » More reports (doing more audits), Enables asset management
-

# Key Takeaways & Next Steps

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- » **Critical mass has been reached**
    - 90% utilisation of the tracking solution >> real benefits
  
  - » **Role of Manufacturers/Loan Set Providers**
    - **Synthes** were the first in Ireland to put GS1 codes on their loan set trays
    - Need more Manufacturers to follow this lead!
  
  - » **Next Steps**
    - Complete Phase 2 Instrument tracking and Phase 1 Endoscopy tracking
    - Implant tracking
-

# Contact

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## **Pauline Biggane**

Project Manager for RIMD/Endoscope  
Track and Trace Project

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Kilkenny



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