

2017

Hospital Authority Convention

醫院管理局研討大會

ROAD TO ACHIEVE ZERO RETAINED SURGICAL ITEMS INCIDENTS – USING ARTIFICIAL INTELLIGENCE TO SAFEGUARD SURGICAL SAFETY IN OPERATING THEATRE

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ANAESTHESIA AND OPERATING THEATRE SERVICES

TSEUNG KWAN O HOSPITAL



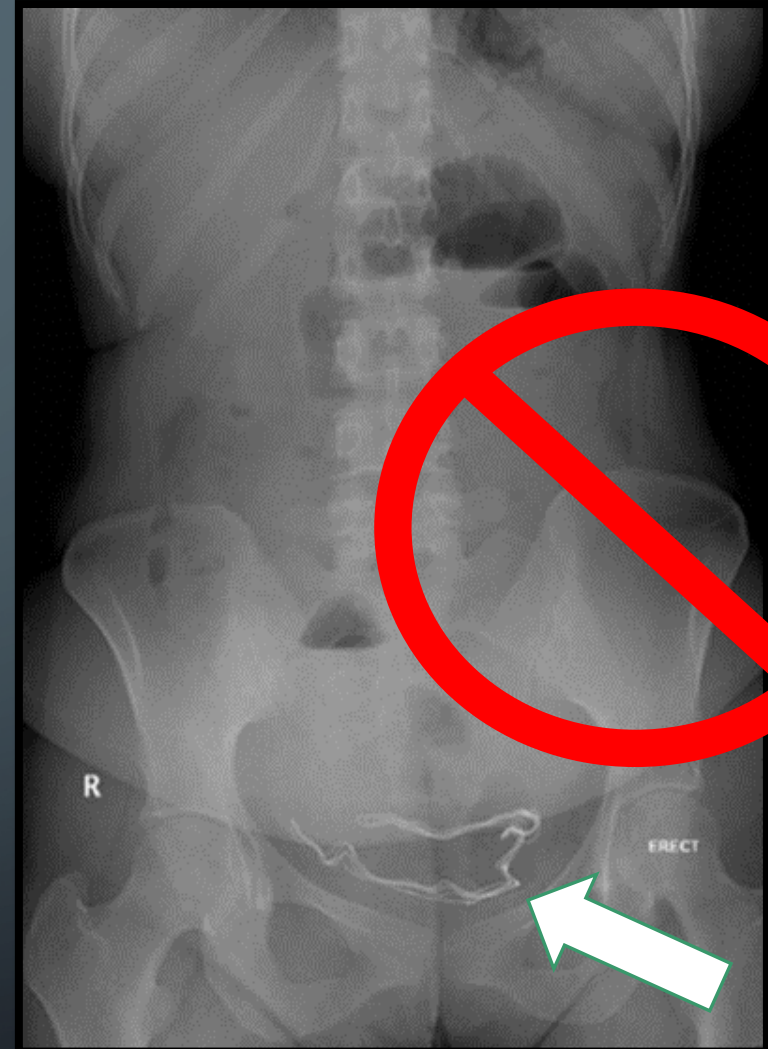
Anaesthesia and Operating
Theatre Services
Tseung Kwan O Hospital



九龍東醫院聯網
KOWLOON EAST CLUSTER

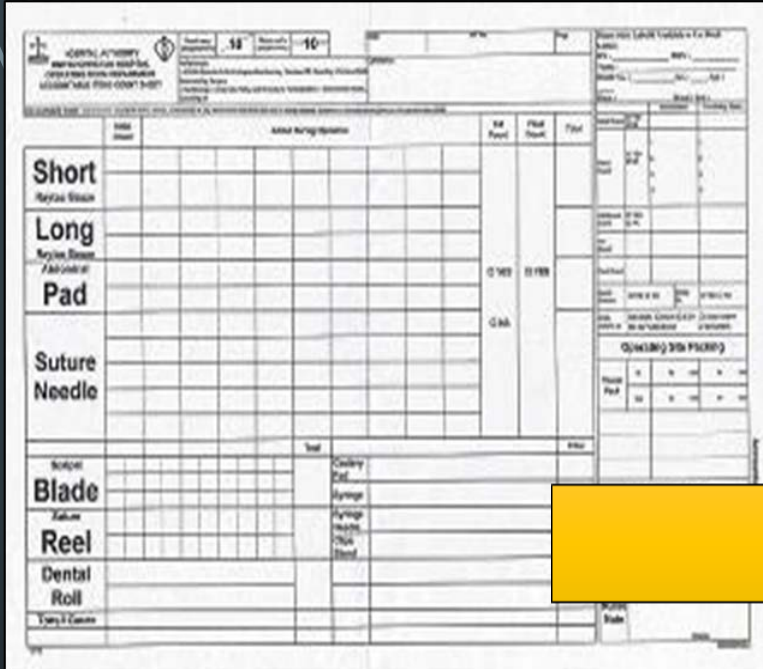
OBJECTIVES

- To **enhance patient safety** in the perioperative setting, with an aim of **achieving zero incident of retained surgical items (RSI)**
- To enhance the **efficiency and transparency** of intraoperative documentation

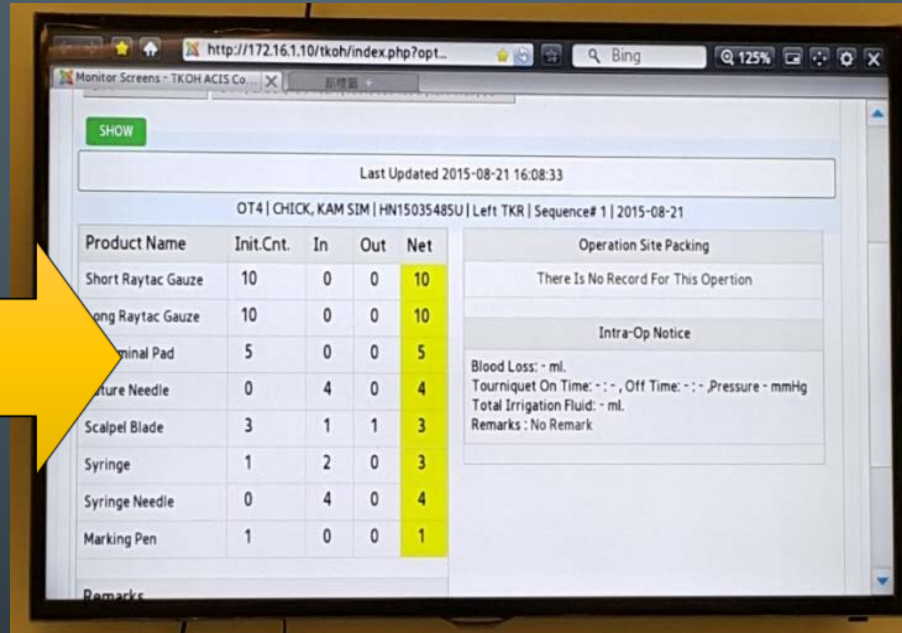


HOW DOES THE SYSTEM WORK?

PNIS

A printed form titled "Cluster Based Count Sheet + Intraoperative Nursing Documentation". It contains a large table with columns for "Short", "Long", "Pad", "Suture Needle", "Scalpel Blade", "Reel", and "Dental Roll". The table is divided into sections for "Initial Count" and "Final Count". A yellow arrow points from this form towards the Smart TV display.

Cluster Based Count
Sheet + Intraoperative
Nursing Documentation

A Smart TV displaying a web application interface. The interface shows a table of product counts and operation site packing information. The table has columns for "Product Name", "Init.Cnt.", "In", "Out", and "Net". The "Net" column is highlighted in yellow. The operation site packing section shows "There Is No Record For This Operation" and "Intra-Op Notice".

Product Name	Init.Cnt.	In	Out	Net
Short Raytac Gauze	10	0	0	10
Long Raytac Gauze	10	0	0	10
Minimal Pad	5	0	0	5
Suture Needle	0	4	0	4
Scalpel Blade	3	1	1	3
Syringe	1	2	0	3
Syringe Needle	0	4	0	4
Marking Pen	1	0	0	1

Display on Smart TV



Data entry through iPad

ARTIFICIAL INTELLIGENCE OF PNIS

ALERT ON SMART TV SCREEN TO ENSURE THE REMOVAL OF INTRAOPERATIVE PACKING OF SWAB

All materials packed and removed during the procedure

removed during the procedure

Throat Pack				
	Throat Pack IN	Throat Pack Out		
1st Episode	13 : 15	No Entry!!		
2nd Episode	13 : 15	No Entry!!		
Operation Site Packing				
Site	Material	In	Out	Net
Abdominal	Short Raytac Gauze	3	0	3
Abdominal	Long Raytac Gauze	3	3	0
Intra-Op Notice				
Blood Loss: - ml. Tourniquet On Time: - : - , Off Time: - : - , Pressure: mmHg Total Irrigation Fluid: - ml. Remarks : No Remark				

Red text is alerted.

Red text is alerted.

PROP-UP ALERT IN IPAD FOR MISSING MANDATORY DATA TO ENSURE ALL COUNTING PROCESSES ARE CONDUCTED

1st Count

☐ Yes ☒ NA Scrub Name: Please select Circulating Name: Please select

Final Count

Scrub Name: Please select

Count Correct

☐ Yes ☒ No Notify Doctor: ☐ If NO, Action: Search ☐ Inform IC And Doctor ☐

Nurse Note

Print After Save ☐ Print To Post to 2F Recovery ☐ Preview Form Save And Close Form

Initial count must be filled!
Final count must be filled!
If count correct is "NO", you must fill in one of the following checkbox!!
Have you notified doctor??
Actual operation must be filled!

An alert box is popped up for missing mandatory fields

ACTIVATE **THE TIMER FUNCTION** ESPECIALLY FOR REMINDING THE ADMINISTRATION OF REGULAR MEDICATION

*Patient Information <1> *General Information <2> Court Sheet Intra Operative Packing Post Operative Packing Intra-Op Documentation LA Cases Timer

00:59:51
Timer 1 : Countdown 1
00:14:41
Timer 2 : Countdown 2

Timer


Timer1 : Countdown 1
PAUSE

Timer2 : Countdown 2
PAUSE

Timer3 :

Hour : Minute : Second : Description: SET

Timer can be set and the count down is shown on Smart TV
They are synchronized by server.



ADVANTAGES OF USING PNIS

THE FIVE C_s

Concise

Correct

Complete

Clear

Convenient

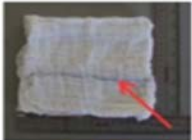
RESULT

- **No RSI** and missing medication incidents in the operating theatres of TKOH
- Staff compliance rate were 96%, **100%** and **100%** for three documentation audits.

SENTINEL EVENTS Q4 2013

Retained Consumables and Instruments (Continued)

5 An Abdominal Pad was Retained in the Abdomen



Abdominal pad with radio-opaque thread (in blue)

- Towards the end of caesarean section, the doctor asked for an extra abdominal pad while nurses were performing the counting process.
- The extra abdominal pad was not documented in the Count Sheet.
- 2 days after the operation, the patient had left abdomen.
- Ultrasound revealed a radio-opaque thread-like shape.
- The abdominal pad was removed surgically.

Key Contributing Factors:

1. Non-compliance with the counting process.
2. Ineffective communication among team members.

Recommendations:

1. The counter-checking process should be performed and signed by the SAME nurse.
2. The Count Sheet should be revised to include all gauzes and pads used and packed inside the wound.

