

Experience of Major CIS Upgrade

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CIS in TMH before Upgrade

- 1999 Install CIS (CareVue Classic) in ICU B8 for 10 beds
- 2002 Extend to 14 beds
- 2003 Post SARS, new ICU in D8 ward with isolation facilities
Relocate CIS from B8 to D8
B8 use paper charting



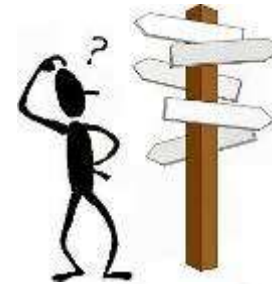
Problems of Different Documentation System in ICU

- ICU Staff
 - Discrepancy between electronic charting and paper documentation
 - Not easy to familiar with all forms & flowsheets
 - Difficult for new comers (Medical & nursing) to work in 2 settings
 - Pitfall for missing data
- Temporary Measures
 - Assign staffs work in one location for a period of time



Problems of Different Documentation System in ICU

- General ward staff
 - Confused
- Temporary measures
 - Tender loving care for parent team during ward round
 - Hand over every detail to nursing staff when transfer out



Problems of Different Documentation System in ICU

- Management
 - One unit, two systems
 - Lack of flexibility for human resource issues:
 - Daily duty assignment
 - Leave management
 - Sick leave
 - Annual leave
 - Training
 - Increase conflicts among staffs



New Problem

- Hardware for CareVue Classic becomes obsolescent

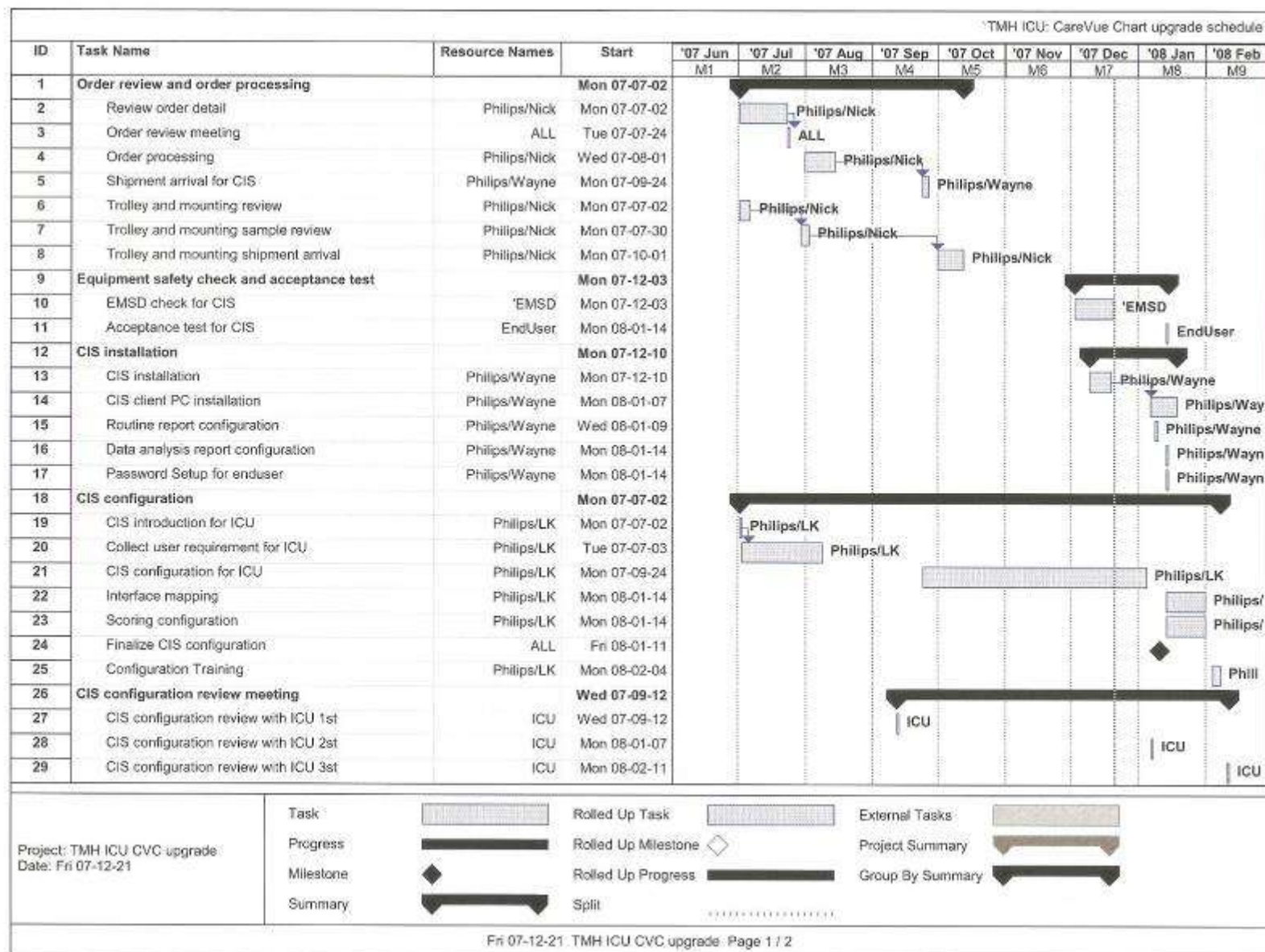


Problem Solving

- Unify documentation system in two wards
- Upgrade /change to IntelliVue Clinical Information Portfolio (ICIP)



Logistic for Upgrade CIS



Preparation & Ordering

- Meeting with vendor for schedule of upgrade
- Network preparation
- Order new essential equipment
 - Concern the compatibility of new system and old monitoring system
- Retain usable equipment
 - Save budget
- Furniture arrangement / modification
 - Spacing
 - OSH



Configuration

- Recruit new members to join the configuration team
 - Medical staff
 - Nursing staff
- Site visit
 - Experience sharing
- Discuss the availability / applicability with vendor's expertise



Configuration

- Configuration team to review the new feature of upgrade system
 - Meeting every 2 weeks + prn
- Introduce the upgrade system to frontline staff and collect feedback
- Try to minimize the discrepancy between CareVue Classic and ICIP
- Develop new forms and flowsheets with the assistance from vendor



Internal Training

- Set up temporary training centre in ICU
 - Staff get used to new system
- Super-users training workshops
 - 1 day
- Ad hoc staff training by trainers (when ward situation allows)
 - 1 hr to 4 hrs
- Mentorship
 - Super-users will be the mentor
 - She/he is responsible for clinical coaching for designated mentees



Internal Training

- New CIS reference guidebook
 - Practical tips for application



External Training

- Briefing sessions to hospital staff about the new CIS / printout
 - Infection control nurses
 - Physiotherapists
 - Dietitian
 - General ward staff



? Major Change in Upgrade CIS



Major Change in Upgrade CIS (TMH)



- Microsoft Office “Word” features
 - Split screen
 - Copy and paste
 - User friendly icon and application
- MAR application
- Medication overview
- Data interface with laboratory
- ECG strip recording
- Clinical photo
- Work list / reminder



Split Screen

Philips ICIP

File Edit View Patient/Chart Document Tools Window Help

BB 04 - Stat Adult - ICU_BB

ICU_BB - BB 04 - Stat Adult | Gender: | Age: | HKID: | Transfer In Date Time: [1]

Admission Documents | **Flowcharts** | *Notes | Orders | Lab Data | Forms/Checklists | Discharge Documents | Summary | Other | Work Folder

Braden Scale Assessment
VS Graphs
Vital Signs
Neuro Assessment
Medication
Defibrillation/Cardioversion
OT I/O Record
I/O
Event
Respiratory
Blood Glucose Monitoring
General Observation

ICU Observation Chart 23/05/2008

	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00
O2 Delivery Mode										
Ventilator Type										
Ventilator Mode										
ETT Size/Marking										
CMV PEEP (b/min)										
O2 Conc. (%)										
Tidal Volume Set (ml)										
PEEP (cmH2O)										
Upper Pressure Limit (cmH2O)										
Oxygen Saturation (%)										
Respiratory Rate (b/min)										
Exp. Minute Volume (l/min)										

ICU_BB - BB 04 - Stat Adult | Gender: | Age: | HKID: | Transfer In Date Time: [2]

Admission Documents | **Flowcharts** | *Notes | Orders | Lab Data | Forms/Checklists | Discharge Documents | Summary | Other | Work Folder

Braden Scale Assess
Data Record
ICU Observation Chs
ICU Temperature O
Medications Overview
Supplementary Asss
Ventilator Prescriptio

Ventilator Prescription Sheet 23/05/2008

	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00
Servo 300-PRVC				f:12 O2:40 VT:500 PEEP:10 U...						

Bennet 840
Servo 300/300A
Servo I
BPAP
Other Ventilation

Servo 300-PRVC
16:00: f:12 O2:40 % VT:500 PEEP:10 U Pressure Limit:50

start Philips ICIP New Microsoft Power... New Microsoft Power...

23/05/2008 16:26

MAR Application

Philips ICIP - [ICU_BB - BB 04 - FUNG CHU | Gender: Male | Age: | HKID: H0992315 | Transfer In Date Time:]

File Edit View Patient/Chart Document Tools Window Help doctor1 doctor1

BB 04 - FUNG CHU - ICU_BB

Admission Documents | Flowsheets | *Notes | Orders | Lab Data | Forms/Checklists | Discharge Documents | Summary | Other | Work Folder

Medication Administration | Allergies: | Admit weight: | Height (cm): | BSA: |

Order Entry |

Order Reminders |

Medication Administration Record : Medications [q24hr]

	22/05/2008 00:00 - 23:59	23/05/2008 00:00 - 23:59	24/05/2008 00:00 - 23:59	25/05/2008 00:00 - 23:59	26/05/2008 00:00 - 23:59
Scheduled					
Cefuroxime (Zinacef) 750 mg IV Q8H		Pending @ 16:00	Pending @ 00:00 Pending @ 08:00 Pending @ 16:00		
Vancomycin 500 mg IV Q8H		500 mg IV @ 16:00	Pending @ 00:00 Pending @ 08:00		

Medications

IV Infusion/Nutrition

Scheduled

One-time and Stat

PRN

Continuous

start Philips ICIP - [ICU_BB...] New Microsoft Power... New Microsoft Power... 23/05/2008 16:08

Philips ICIP - [ICU_B8 - B8 04 - FUNG CHU | Gender: Male | Age: | HKID: H0992315 | Transfer In Date Time:]

File Edit View Patient/Chart Document Tools Window Help nurse3 nurse3

B8 04 - FUNG CHU - ICU_B8

Admission Documents | Flowsheets | *Notes | Orders | Lab Data | Forms/Checklists | Discharge Documents | Summary | Other | Work Folder

Medication Administration Record : Medications [q24hr]

	22/05/2008 00:00 - 23:59	23/05/2008 00:00 - 23:59	24/05/2008 00:00 - 23:59	25/05/2008 00:00 - 23:59	26/05/2008 00:00 - 23:59
Scheduled					
Cefuroxime (Zinacef) 750 mg IV Q8H		☒ 750 mg IV @ 16:00	☐ Pending @ 00:00		
Vancomycin 500 mg IV Q8H			☐ Pending @ 08:00		
			☐ Pending @ 16:00		
			☐ Pending @ 00:00		
			☐ Pending @ 08:00		

Medications

IV Infusions/Nutrition

Scheduled

One-time and Stat

PRN

Continuous

Properties for Medication Administration

Cefuroxime (Zinacef) 750 mg IV Q8H

750 mg IV at 23/05/2008 16:00

Summary Details History

16:10 23/05/2008, nurse3 nurse3 : Cosign
16:09 23/05/2008, nurse1 nurse1 : Amount: 750 mg; Route: IV;
Action: Completed; Chart Time: 23/05/2008 16:00; Scheduled Time: 23/05/2008 16:00

Close

23/05/2008 16:10

MAR Report

Philips Medical Record Search System Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Home

Address http://180.1.3.240/CareVueOrder/

Philips CareVue Order Enquiry System

Select Order Record to Print

Search Result: 11 Records

Patient Name	LO KWONG WAH (DO NOT DISCARD)	HKID	B4158323	Hospital No	
Age		DOB		Bed No	08 07
Admission Date		Gender			
Allergy					
Fax Tel:	Test	Fax Number	11111111	Preview	Discharge Home

Scheduled	Remark	Administration Record in last 24 hrs
☒ Vancomycin 500 mg IV Q12H (00:00, 12:00) Start: 06/05/2008 00:00:00 Stop: Ordered: doctor1 doctor1 Overriding reason:		Pending @16/05/2008 08:00:00 Pending @15/05/2008 20:00:00 Pending @15/05/2008 00:00:00 Pending @14/05/2008 20:00:00
☐ Phytomenadione (Vit K1) 10 mg IV Daily (Specific Time) Start: 07/05/2008 16:00:00 Stop: Ordered: doctor1 doctor1 Overriding reason:		Pending @16/05/2008 16:00:00 Pending @15/05/2008 16:00:00
☐ Ranitidine (Zantac) 50 mg IV Q8H Start: 07/05/2008 04:00:00 Stop: Ordered: doctor1 doctor1 Overriding reason:		Pending @16/05/2008 12:00:00 Pending @16/05/2008 04:00:00 Pending @15/05/2008 20:00:00 Pending @15/05/2008 12:00:00 Pending @15/05/2008 04:00:00 Pending @14/05/2008 20:00:00
☒ Cefuroxime (Zinacef) 1500 mg IV Q8H Start: 07/05/2008 04:00:00 Stop: Ordered: doctor1 doctor1 Overriding reason:		Pending @16/05/2008 12:00:00 Pending @16/05/2008 04:00:00 Pending @15/05/2008 20:00:00 Pending @15/05/2008 12:00:00 Pending @15/05/2008 04:00:00 Pending @14/05/2008 20:00:00
☒ Metronidazole (Flagyl) 500 mg IV Q8H Start: 07/05/2008 04:00:00 Stop: Ordered: doctor1 doctor1 Overriding reason:		Pending @16/05/2008 12:00:00 Pending @16/05/2008 04:00:00 Pending @15/05/2008 20:00:00 Pending @15/05/2008 12:00:00 Pending @15/05/2008 04:00:00 Pending @14/05/2008 20:00:00
☐ One-time	Remark	Administration Record in last 24 hrs
☐ Hartmann's Solution 500 ml Start: 09/05/2008 16:00:00 Stop: Ordered: Shen Judith Overriding reason:		
☐ Gelofusin 250 ml FR Once Start: 06/05/2008 12:00:00 Stop: Ordered: doctor3 doctor3 Overriding reason:		
☐ Morphine 2 mg IV STAT Start: 06/05/2008 22:00:00 Stop: Ordered: doctor1 doctor1 Overriding reason:		

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Medication Overview

Philips CareVue Chart - [ICU_DB - DB 07 - LO KWONG WAH (DO NOT DISCARD)] Gender: Age: HKID: B4158323 Transfer In Date Time: |

File Edit View Patient/Chart Document Tools Window Help nurse1 nurse1

DB 07 - LO KWONG WAH (DO NOT DISCARD)

Admission Documents Rowsheets *Notes Orders Lab Data Forms/Checklists Discharge Documents Summary Other Work Folder

Braden Scale / Allergies: Admit weight: Height (cm): BSA:

Data Record

ICU Observati

ICU Temperat

Medications O

Supplementar

Ventilator Pre

Legend

- Continuous Dose
- Pending Continuous Dose
- Dose Increase
- Dose Decrease
- Order Continues
- Scheduled Dose Given
- Scheduled Dose Held
- Scheduled Dose Missed
- Scheduled Dose Pending
- PSN Dose Given

Medications Overview

Sort by: All Meds By Name

8/5 - 16/5/08

View by: q1hr q Day q Week

Description	Duration	Thu 8	Fri 9	Sat 10	Sun 11	Mon 12	Tue 13	Wed 14	Thu 15	Fri 16
Cefuroxime (Zinacef) 1500 mg IV Q8H	Day 9	■	■	■	■	■	■	■	■	■
Metronidazole (Flagyl) 500 mg IV Q8H	Day 9	■	■	■	■	■	■	■	■	■
Midazolam 45 mg/45 ml NS	2 days total									
Morphine 45 mg/45 ml NS	2 days total									
Nixachranaline 1/1000		■								
Isosorbide Dinitrate 20mg IV Cont	1 days total									
Phytomenadione (Vit K1) 10 mg IV Daily...	Day 9	■	■	■	■	■	■	■	■	■
Ranitidine (Zantac) 50 mg IV Q8H	Day 9	■	■	■	■	■	■	■	■	■
Vancomycin 500 mg IV Q12H (00:00, 12:00)	Day 8	■	■	■	■	■	■	■	■	■

start Microsoft PowerPoint Philips CareVue Chart... 15/05/2008 18:10



Data Interface from Laboratory

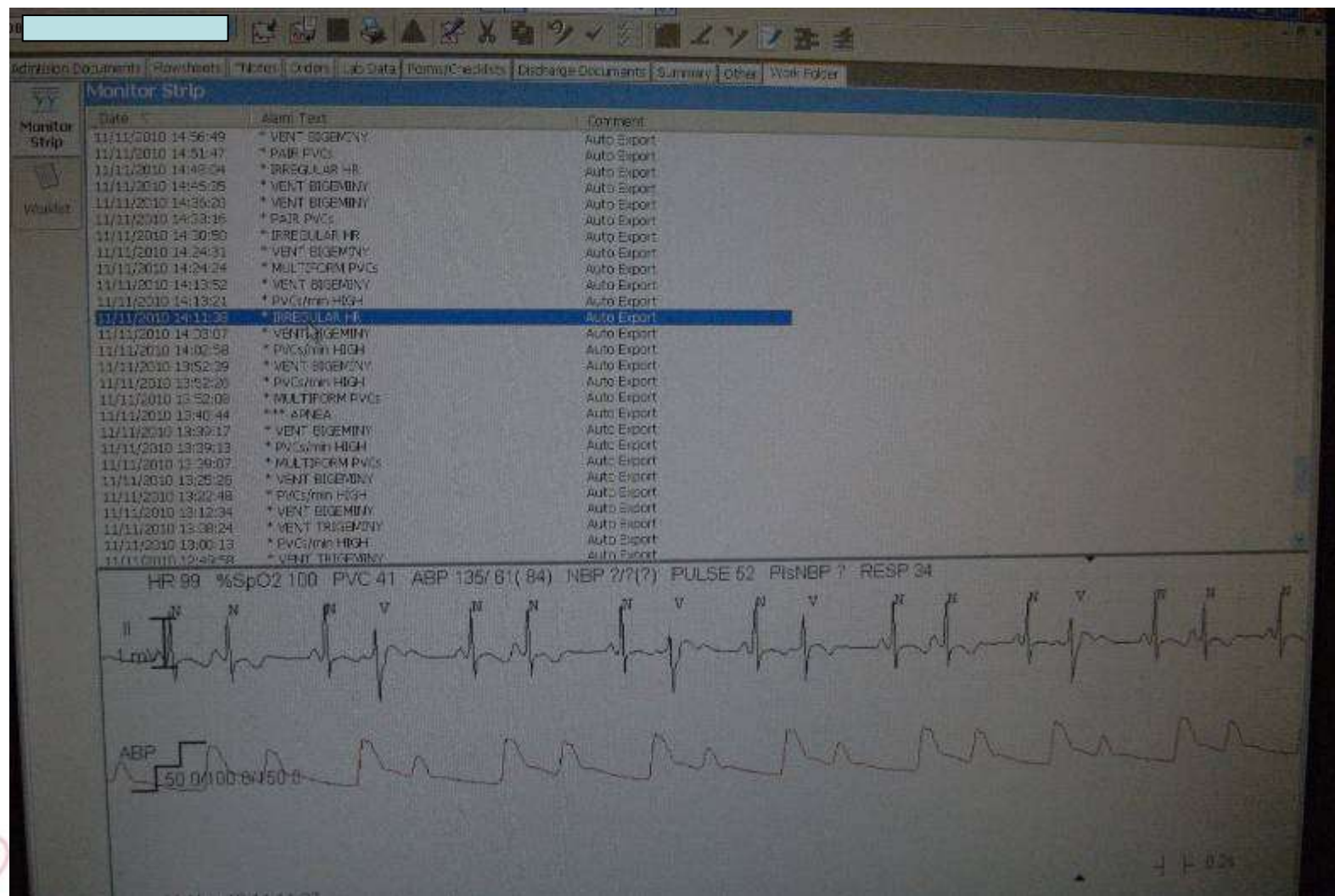
Laboratory Flowchart											
		21/11/2010		22/11/2010		23/11/2010		24/11/2010			
		08:00	16:00	08:00	16:00	08:00	16:00	08:00	16:00		
Blood Gases	pH, Blood Gas		7.366	7.4	7.456		7.41				
	pCO ₂ , Blood Gas (kPa)		4.09	5.28	4.21		5.24				
Chemistry	pO ₂ , Blood Gas (kPa)		12.20	19.75	11.44		14.34				
Hematology	Base Excess, In-vitro, Blood Gas		-2.3	-0.6	-0.5		-0.2				
Autoimmune	Bicarbonate, Actual (mmol/L)		22	24	22.9		24.3				
Endocrine	Sodium (mmol/L)		141	141		138	140		141		
Tumour Marker	Potassium (mmol/L)		4.2	3.9			4.2		4.0		
Drug Levels	Urea (mmol/L)		6.1	5.6		4	4.5		4.5		
CSF	Creatinine (umol/L)		71	66		61	64		66		
Hepatitis B	Albumin (g/L)		40	34		34	34		26		
Renal Calculations	Bilirubin, Total		5	10		11					
Other	Alkaline Phosphatase, Total (U/L)		74	59		57					
	Alanine Aminotransferase (U/L)		39	15		33					
	Adjusted Ca (mmol/L)										
	Phosphate (mmol/L)										
	Creatine Kinase (U/L)		77	329		519					
	LDH (U/L)										
	Glucose, Random (mmol/L)		11.3	7.7		9.6					
	Troponin I (ug/L)										
	WBC (10 ⁹ /L)		15.90	15.28		16.50	15.60				
	Haemoglobin, Blood (g/dL)		12.4	10.7		10.6	10.5				
	HCT		0.38	0.36		0.32	0.31				
	MCV (fL)		93.8	91.6		92.0	92.0				
	MCH (pg)		31.3	30.6		31.3	31.3				
	MCHC (g/dL)		33.3	33.4		33.3	33.3				
	Platelet (10 ⁹ /L)		199	204		135	138				
	Neutrophil, absolute (x10 ⁹ /L)		12.8	14.6		12	12.4				
	Lymphocyte, absolute (x10 ⁹ /L)		1.9	2.1		2.8					
	Prothrombin Time (sec)		11	11.4		11.3					
	INR		1	1		1					
	APTT (sec)		24.9	25.3		26.2					





ECG Strip and Clinical Photo

Record



Worklist & Reminder

Admission Documents | Flowcharts | Notes | Orders | Lab Data | Forms/Checklists | Discharge Documents | Summary | Other | Work Folder

Allergies: No known Drug Allergy. Admit weight: • Height (cm): • BSA:

Scheduled, One time and STAT

Overdue

- ☒ 23/11/2010 16:00 Ceftriaxone (Rocephin) 1 gr IV Q12H
- ☒ 23/11/2010 16:00 Ranitidine (Zantac) 50 mg IV Q8H
- ☒ 23/11/2010 20:00 amantadine 100mg PO/NG BD
- ☒ 23/11/2010 20:00 Doxycycline 100 mg PO/NG BD
- ☒ 23/11/2010 20:00 Oseltamivir (Tamiflu) 150 mg PO/NG BD
- ☒ 24/11/2010 00:00 Ranitidine (Zantac) 50 mg IV Q8H
- ☒ 24/11/2010 04:00 Ceftriaxone (Rocephin) 1 gr IV Q12H
- ☒ 24/11/2010 08:00 amantadine 100mg PO/NG BD
- ☒ 24/11/2010 08:00 Doxycycline 100 mg PO/NG BD
- ☒ 24/11/2010 08:00 Oseltamivir (Tamiflu) 150 mg PO/NG BD
- ☒ 24/11/2010 08:00 Ranitidine (Zantac) 50 mg IV Q8H

24/11/2010 16:00

- ☒ Ceftriaxone (Rocephin) 1 gr IV Q12H
- ☒ Ranitidine (Zantac) 50 mg IV Q8H

20:00

- ☒ amantadine 100mg PO/NG BD
- ☒ Doxycycline 100 mg PO/NG BD
- ☒ Oseltamivir (Tamiflu) 150 mg PO/NG BD

25/11/2010 00:00

- ☒ Ranitidine (Zantac) 50 mg IV Q8H

04:00

- ☒ Ceftriaxone (Rocephin) 1 gr IV Q12H

08:00

- ☒ amantadine 100mg PO/NG BD
- ☒ Doxycycline 100 mg PO/NG BD
- ☒ Oseltamivir (Tamiflu) 150 mg PO/NG BD
- ☒ Ranitidine (Zantac) 50 mg IV Q8H

Outlines

- ☒ 1/2 1/2 Solution 500 ml + 20 mmol KCl (No administration in last 48 hours)
- ☒ 1/2 1/2 Solution 500 ml + 20 mmol KCl ; + 10 ml Addamell N daily (No administration in last 48 hours)
- ☒ NS 500 ml @ 3 ml/hr for A-line (No administration in last 48 hours)
- ☒ Metoprolol (Maxipon) 10 mg IV Q8H PRN (No administration in last 48 hours)
- ☒ Paracetamol (Panadol) 500 mg PO/NG Q4H PRN For pain or fever ≥ 38 (No administration in last 48 hours)

2010/11/24

Installation

- Minimize the disturbance to patient / service
 - Weekday vs weekend
 - Minimize the disturbance to ward environment and maintain proper infection control



Finalization

- CIS configuration review / finalize
- Liaison with IT staff & pharmacy for upgrade CIS (additional function)
- Announce to hospital staff
 - General ward
 - OT
 - Record department (new printout)
 - Pharmacy (MAR)



Go Alive

***Minimize the
interruption!**



Go Alive

- 2008, total 30 workstations
- Ensure enough manpower from vendor to ensure smooth change over
- Arrange enough nursing staff (prefers super-users)
- Print the printout before upgrade
- Shift to paper chart during change over
- Enter data into ICIP afterwards
- No double charting for ICIP (except MAR)
 - Staff are already familiar with ICIP after training



Hiccup in Implementation

- Problem of MAR
 - Confusion in sign and co-sign personnel
 - Missing date in MAR printout
- Workflow of ADT
 - Interface problem during admission (central monitor to CIS)



Way Forward

- Simple way for retrieve data
- Simple way for configuration
- Simple way for package print out
- Link up with CMS
 - Patient ePR
 - Laboratory test order & result
 - Filmless diagnostic imaging



Thank!

