



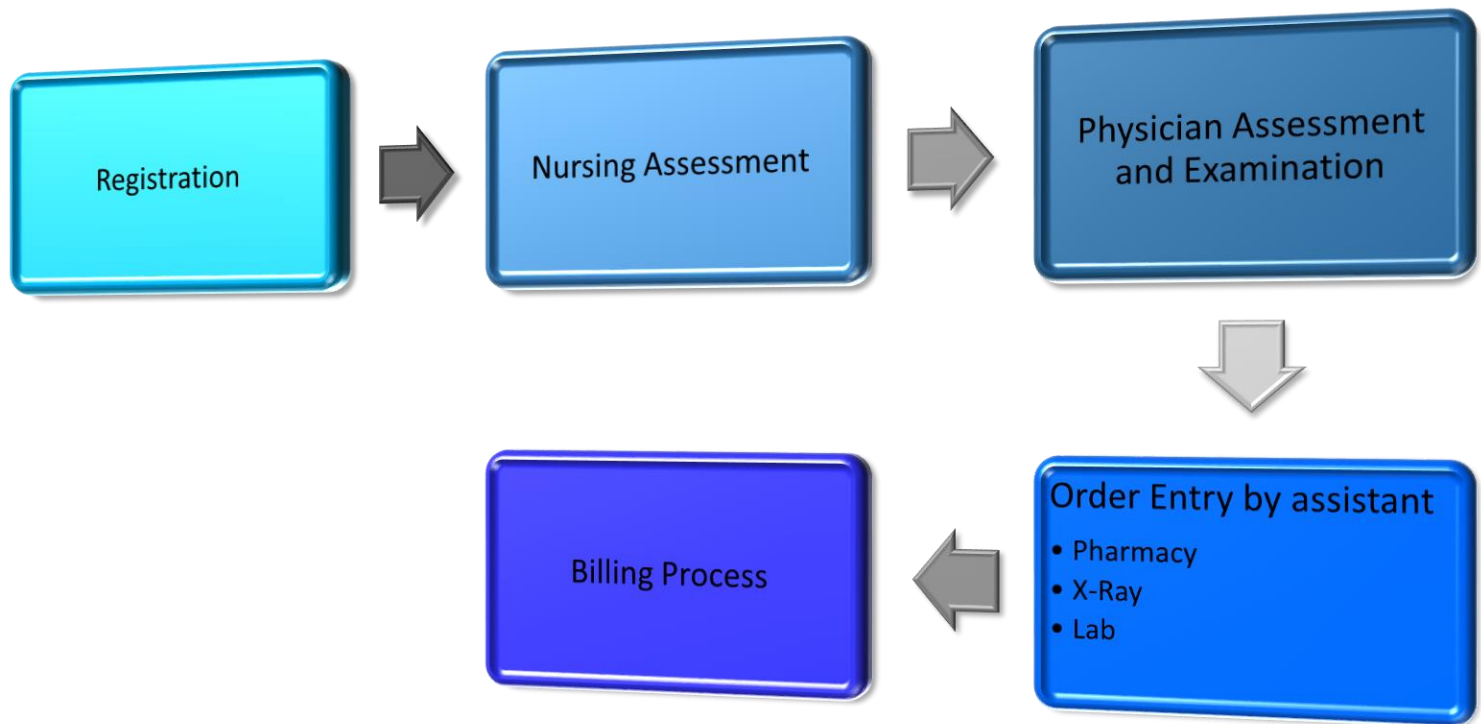
Improving Safety And Enhancing Quality Care Through IT Adoption

Case study of paknampo hospital

Piyanun Yenjit
Former CIO Paknampo Hospital,
Director of Operation, Medcomp Systems


Providing the Power to Care
MEDICOMP SYSTEMS®

Paper Base (25 Years)



Transformation Started

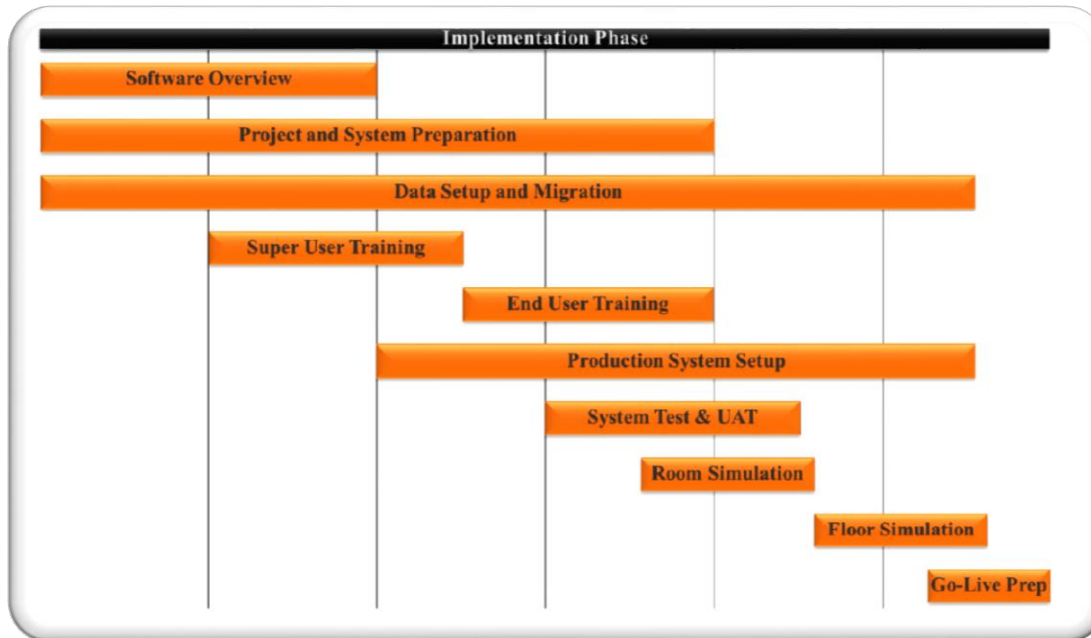


Dr.Pongsak Viddayakorn
President



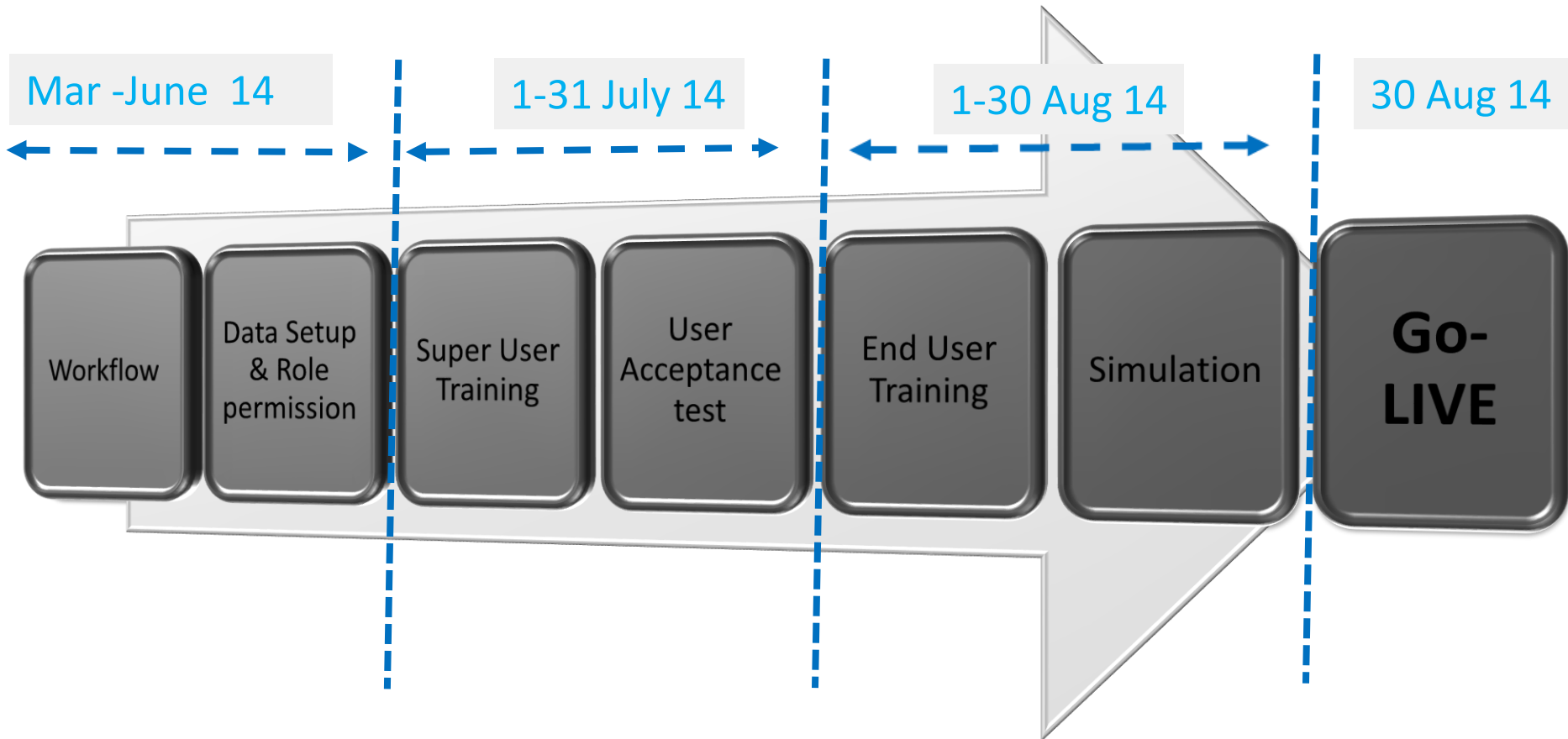
Dr.Satit Viddayakorn
Advisor Board of Director

HIS Implementation Phase (7 Months Project)



- First IT Transformation at PNP
- Biggest operational change in 25 years

Implementation Phase



Electronic Nursing Documentation Systems



Electronic Nursing Documentation System Interface (Screenshot):

Header: Tuan@10.101.72.108 | ARCS PRODUCTION V69.43.23

Patient Information: นาม บัญชี: ชื่นมณี (01-06-12991) | Age: 84 Y 5 M 25 D | Date of Birth: 01-01-1933 | Gender: Female | Blood Group: Ht: Wt: BMI: BSA: | No of Visits: 12 | Address: 35/56 หมู่ 6 | โทรศัพท์: 089-9850462 090-441 | I-17-003655 - 26/04/2017 17:56 - หมอ: ศาสตราจารย์ ดร. ชื่นมณี

Diagnosis (3):

Diagnosis	Code	Onset	Type
Bacterial infection, unspecified	A499	26/04/...	Principal
Congestive heart failure	I500	26/04/...	CC-M...
Difficulty in walking, not elsewhere classified	R262	08/06/...	CC-M...

Orders (100):

Name	Code	Quant	Order	Status
Pulse Oximeter, pulse 65 bpm	700...	2	S03...	Rais...
Alpha bed	070...	16	S03...	Rais...
oxygen/hr Canular	070...	16	S03...	Rais...
IV SET 500ml 10% dextrose 5% dextrose	000...	1	S03...	Disp...
Albumin 25% 50 ml inj.	000...	2	S03...	Ad...
Lasix inj. 20 mg/2 ml	000...	1	S03...	Ad...
Portable (คนไข้)	XRA...	1	S03...	Regi...
NEEDLE 22G * 1	000...	5	S03...	Disp...

Results (57):

Investigations	Order No	Order Date	Status	Is Abnorm
Blood Urea Nitrogen (BUN)	17023877	26/04/20...	Reviewed	Y
Complete Blood Count (CBC)	17023879	26/04/20...	Reviewed	Y
Blood Urea Nitrogen (BUN)	17023880	26/04/20...	Reviewed	Y

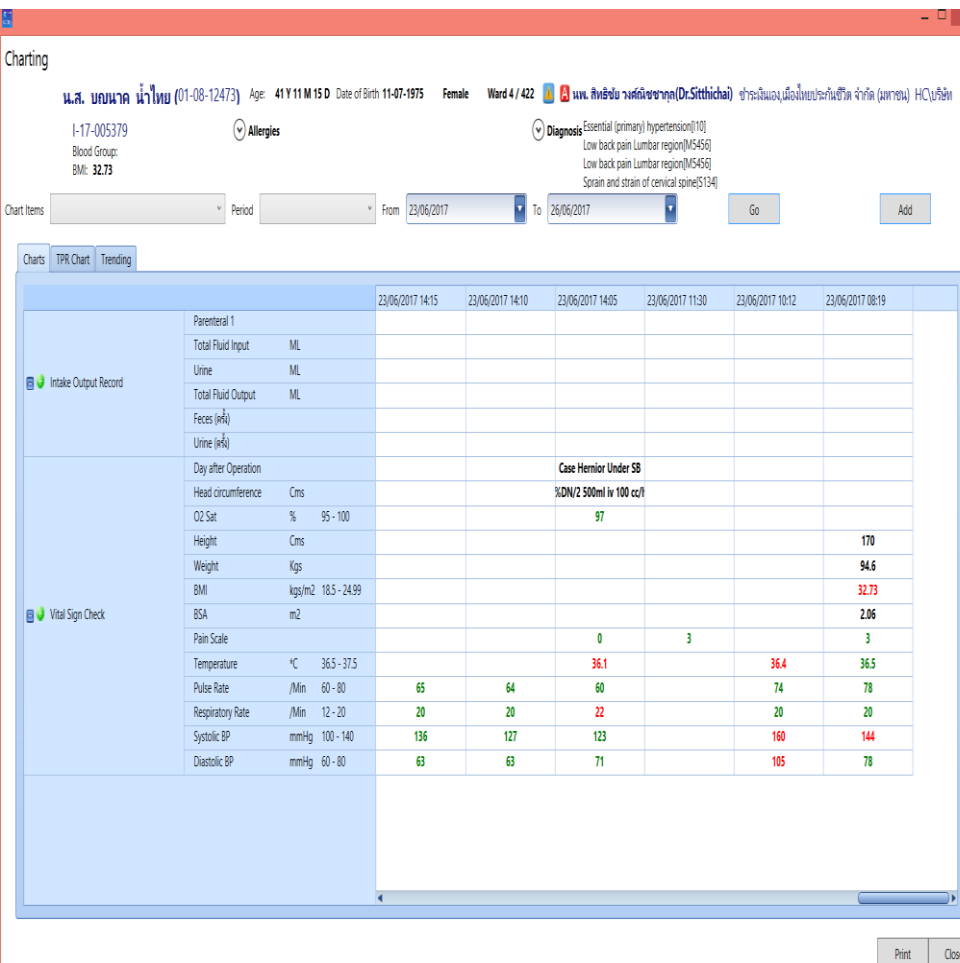
Notes (30):

Clinical Note	Recorded On	Status	Recorded By
Progress Note	21/06/2017 11...	Draft	น.ร. ชื่นมณี
SOAP	21/06/2017 0...	Draft	น.ร. ชื่นมณี
Progress Note	19/06/2017 1...	Draft	น.ร. ชื่นมณี

Forms (50):

Form ID	Form	Recorded	Status	Recorded
IPD-Reassessment Nursin	24/06/2...	Draft	น.ร. ชื่นมณี	
IPD-Nursing Focus List	24/06/2...	Draft	น.ร. ชื่นมณี	
IPD-Reassessment Nursin	24/06/2...	Draft	น.ร. ชื่นมณี	

Nursing Documentation : Vital Sign, Intake Output



First IT Transformation in 25 years (7 months project)

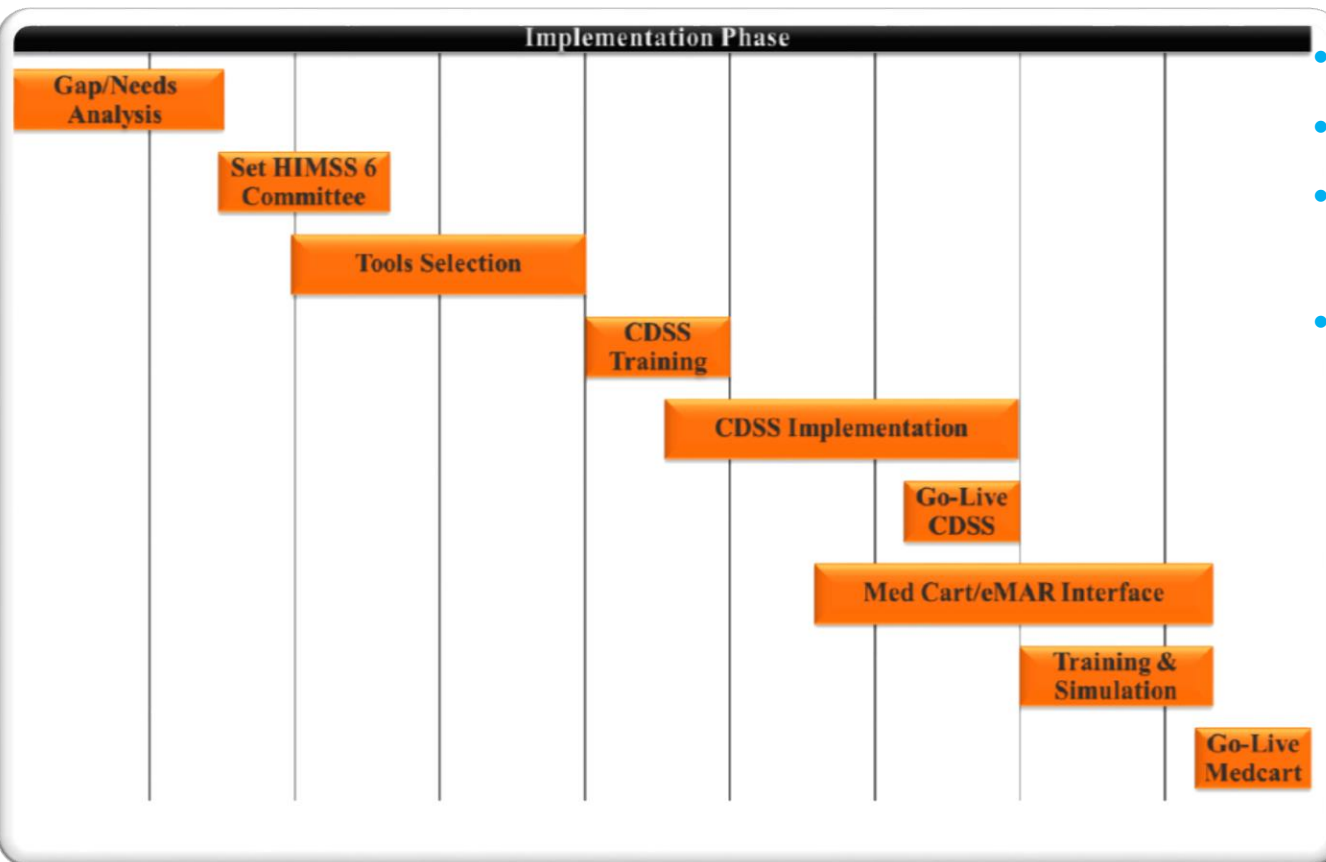




8 Months after
Implemented HIS
(June 2015)

- PACS
 - No more films
 - Reduce space for storage the films
 - Reduce waiting times
 - Save environment and our world

Phase II (Go thru HIMSS6)



- Why we need ?
- What we get ?
- What we need for achieve ?
- Do it and make it happen !!!

Self Assessment

Asia Pacific EMR Adoption ModelSM

Stage	Cumulative Capabilities
Stage 7	Complete EMR, Data Analytics to Improve Care
Stage 6	Physician documentation (templates), Full CDSS, Closed Loop Medication Administration
Stage 5	Full R-PACS
Stage 4	CPOE, Clinical Decision Support (clinical protocols)
Stage 3	Nursing/Clinical Documentation, CDSS (error checking), PACS Available Outside Radiology
Stage 2	CDR, Controlled Medical Vocabulary, CDS, HIE capable
Stage 1	Ancillaries - Lab, Rad, Pharmacy - All Installed
Stage 0	All Three Ancillaries Not Installed

Stage 1:

• PASS

Stage 2

• PASS

Stage 3

• PASS

Stage 4

• PASS

Stage 5

• PASS

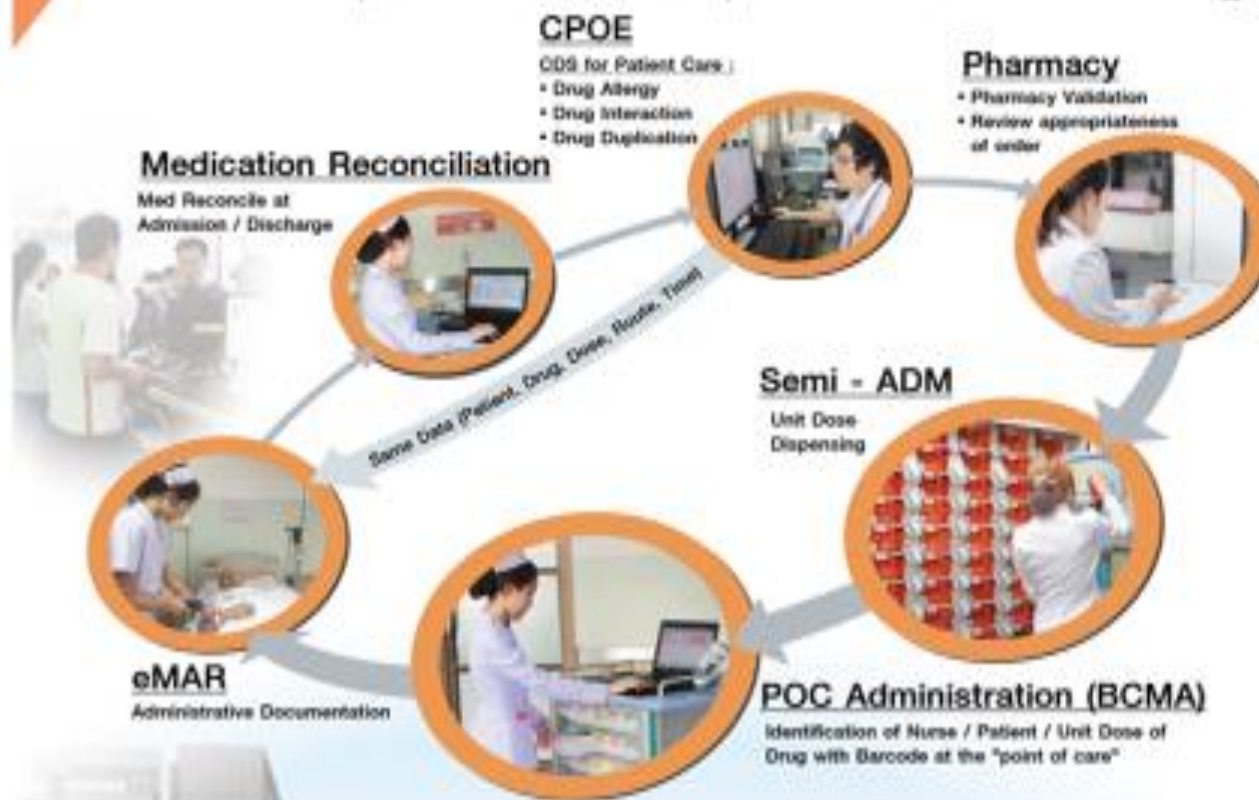
Stage 6

• On Process

Stage 7

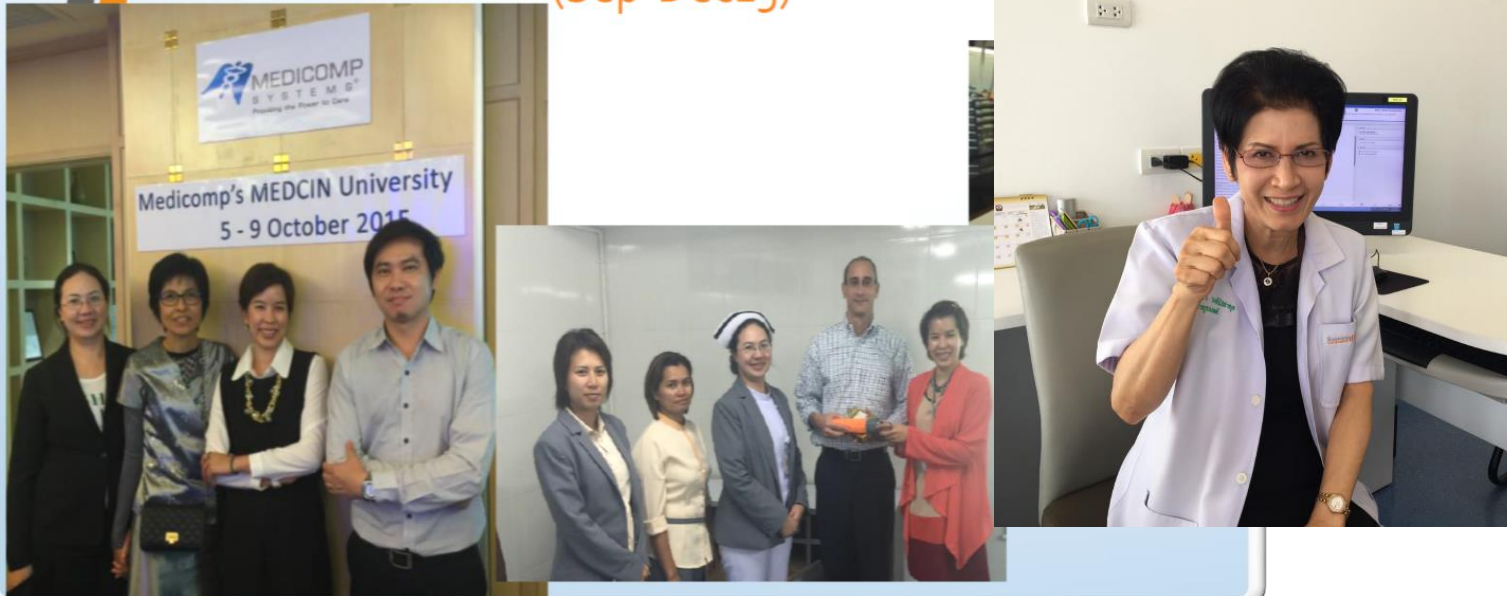
• On Process

Paknampo Closed Loop Medication Management System











Physician Documentation and CDSS Project

Physician Documentation Project (Sep-Dec15)



- 3 months implementation
- Improved quality of medical record
- Improved quality of care
- CDSS at the point of care
- Physician Documentation with Structure data
- Preparation for HIE ,data analysis

CDSS Implementation

OPD MED	Pediatric	OB/GYN	Ward 6
 BASIC NOTE	 BASIC NOTE	 BASIC NOTE	 Blank/Basic Note.
 Gastrointestinal .	 Respiratory.		 Nurse Note.
 Respiratory.			
First Phase			

HIMSS6 Preparation activities

Users

- PR “what is HIMSS and benefit”
- Training and testing

Management

- Weekly update plan and status

Concerning Point				
Concerning Point	Description	Criticality	Effectiveness	Notes
Software	EMAR Function	Critical	Med	Patch arrive on 26 Oct. 15
	EMAR Report (Unit Dose Sticker)	High	High	With some software limitation
	CDSS Interface	Low	N/A	
User	EMAR Function	Low	High	
	CDSS Function	Med	High	Due to time limitation

**Congratulations to Paknampo Hospital in Nakhon Sawan,
Thailand first hospital in Thailand to attain Stage of the EMRAM!**

HIMSS Analytics **STAGE 6**

The hospital was successfully validated at Stage 6 of the EMRAM earlier this week, and will be receiving their award at the HIMSS AsiaPac16 Conference & Exhibition this August.



PAKNAMPO HOSPITAL

Clinical Transformation Journey

"Every hospital can improve healthcare by using
Information Technology, if we can do
– yes, you can do!"

Next

"Digital Hospital"

Data Analytics for improve

- Quality of Care
- Patient Safety
- Process efficiency

Tele Medicine Pre-Hospital care

Full PACS

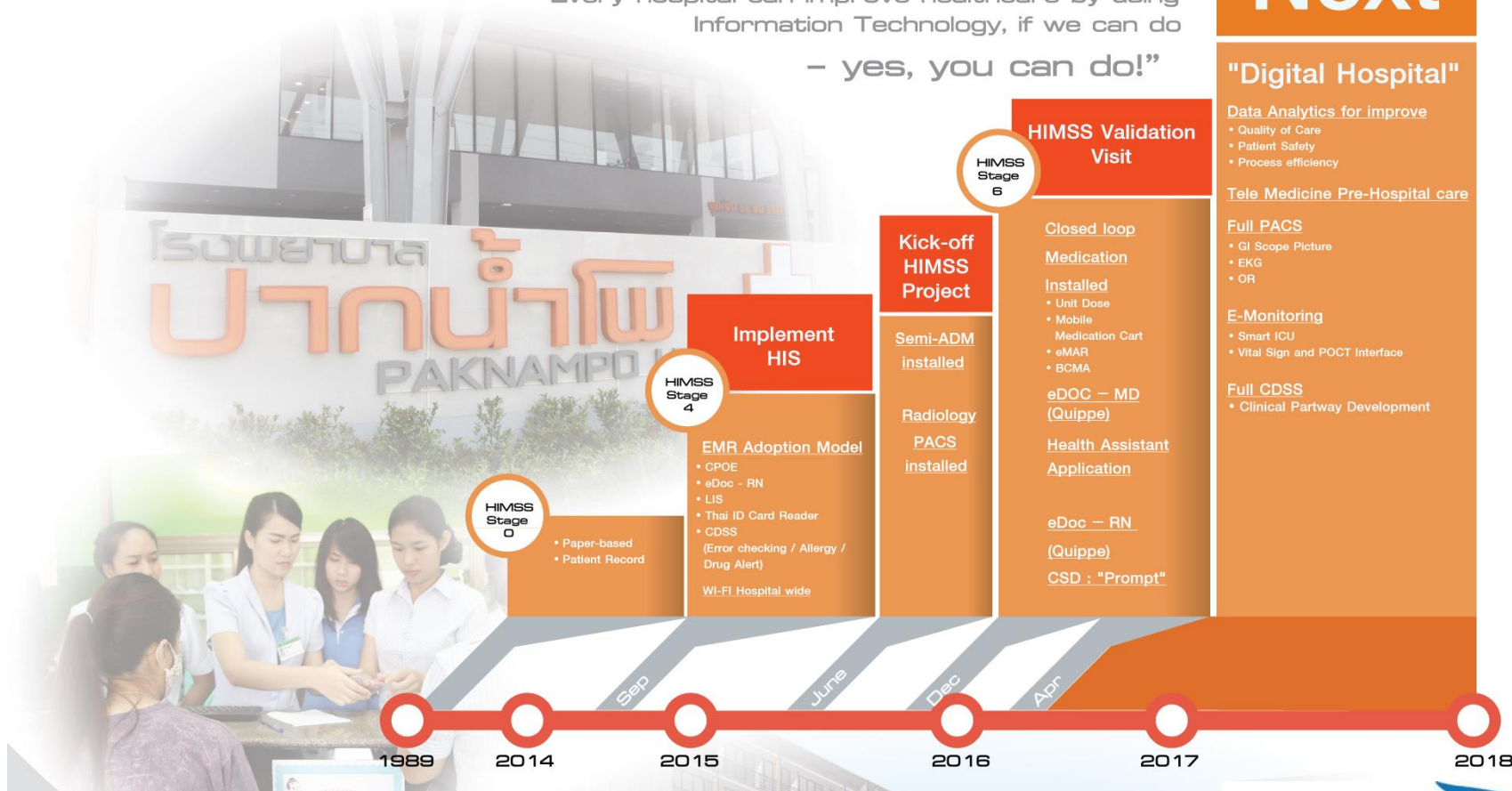
- GI Scope Picture
- EKG
- OR

E-Monitoring

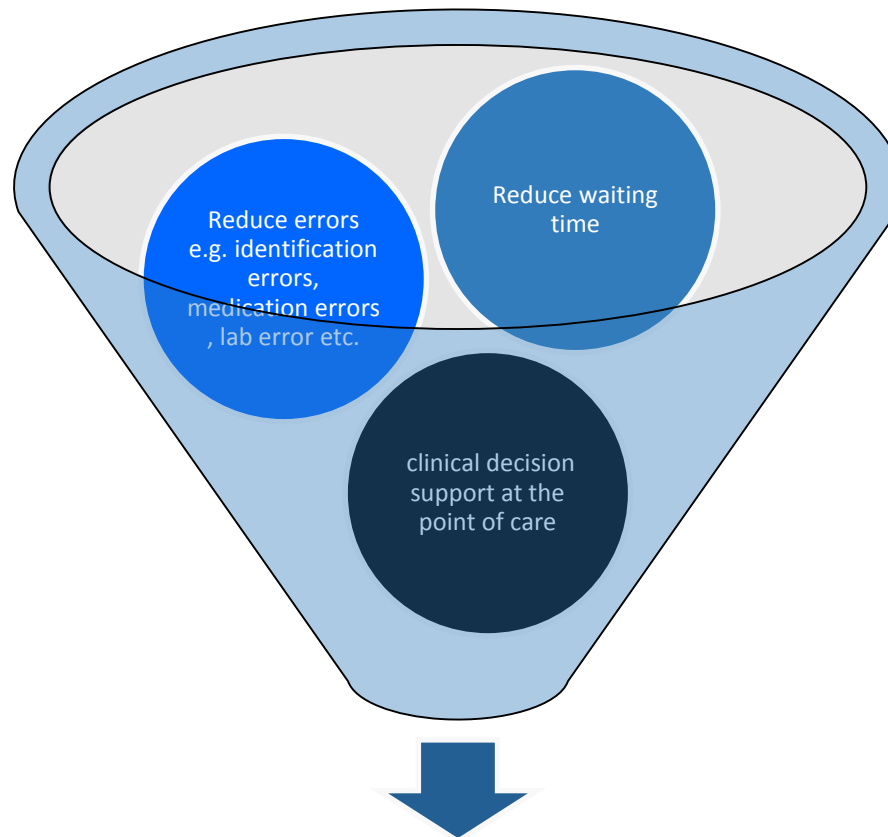
- Smart ICU
- Vital Sign and POCT Interface

Full CDSS

- Clinical Pathway Development



IT Adoption Benefits



Quality of care

Patient Identification

- Reduction in patient identification error by using smartcard reader for registration
- Reduction of lab error by using bar code
- Reduction of Administration by using bar code



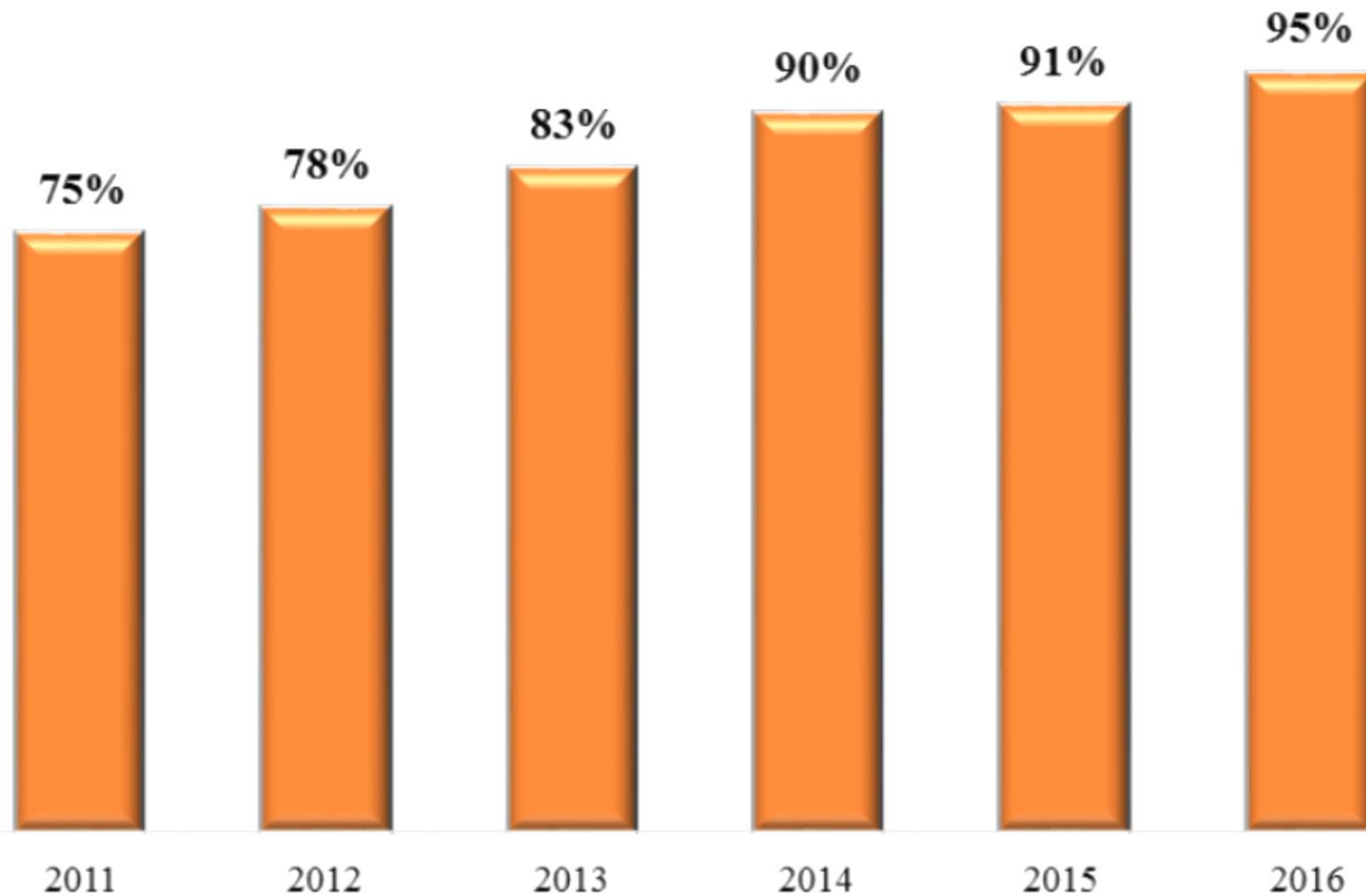
Waiting Time

- Stop using OPD card almost entirely (only cases attend before HIS implemented)
- Reduction in waiting time particularly at ER – no need to wait for OPD card
- Reduction of writing duplication of document
- Reduction of time for radiology result
- Reduction in waiting time for medication at Pharmacy counter (speed up billing and drugs dispensing)

Physician: Faster action for all orders

Physicians can access to patients data e.g. Vital signs , medication history, nursing notes, lab, X-ray from any site in the hospital

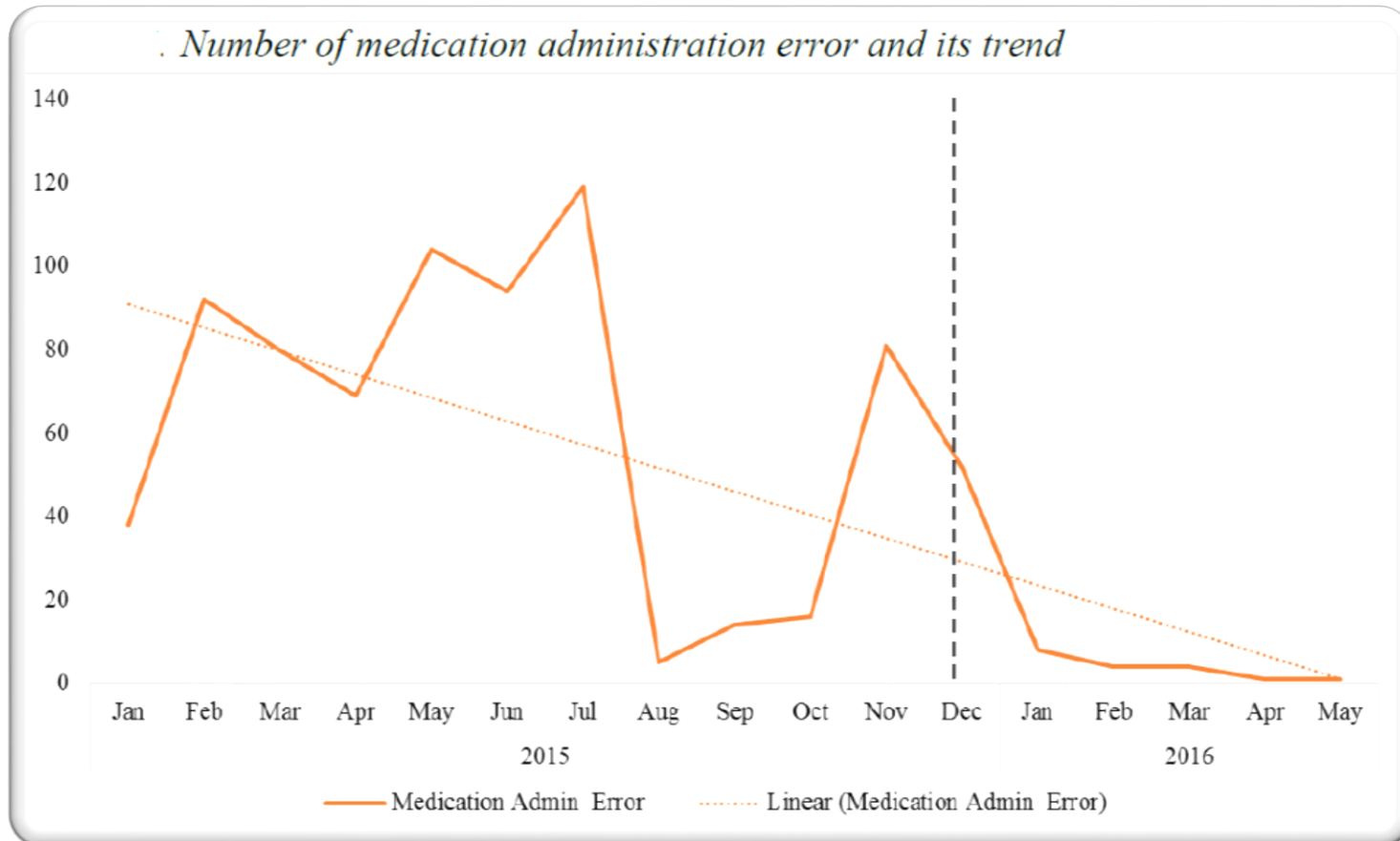
Percent Completeness of Medical Records



Medication Error

- Reduction in Medication errors (from hand writing)
- Safety net for ordering allergic/drug interaction medication to patients (by using CDS alert)
- Reduction in Administration errors

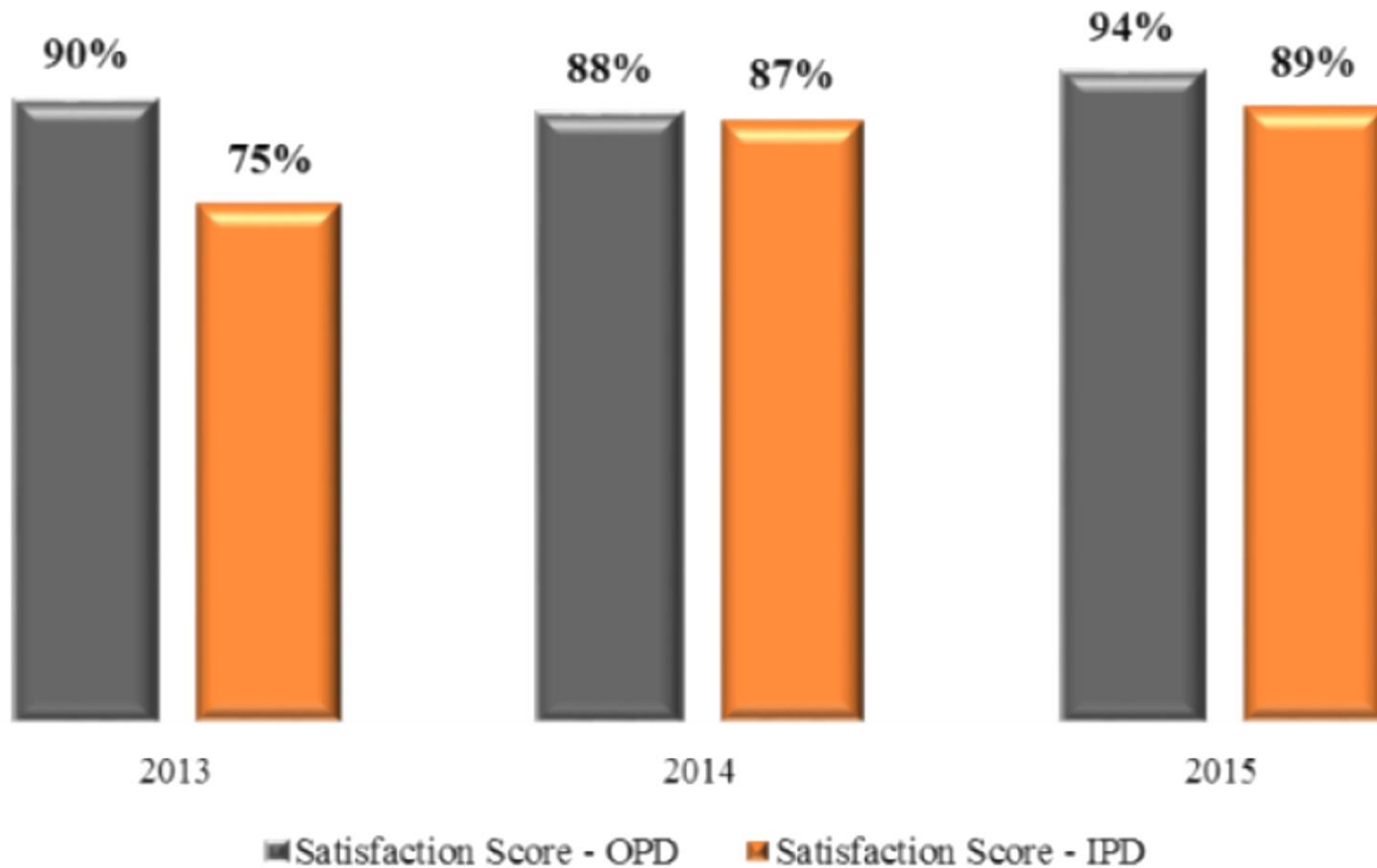
Number of medication administration error and its trend



Organization/Management Value

- Overall improvement of the patients satisfaction scores (currently about 95 %)
- Reduction of waste film and re-imaging of the patients
- Reduction of waste papers
- Reduction space of medical records

Patient Satisfaction Score of OPD and IPD



Staff Benefits

- Reduce unnecessary workflow
- Doing their professional job (not other professional job)
- Having time with patient instead of paper work
- Happy workplace ; Staff Engagement 75% at 2014

Management Benefits

- Patient Satisfaction
- More space for services due to can reduce the space for medical record and film storage
 - Reduce cost of paper 525 Baht/week (Data year 2016)
(Estimated 45,000 Philippine Peso/year)
- Reduce cost of operation services
- Reduce cost of poor quality
- Improved Stock Management
- Data management for marketing and quality
- Staff satisfaction ;Staff Engagement 75% at 2014

Average no. of complaints on waiting time per month

Average no. of complaints on waiting times per month	Y2014	1H2015	2H2015-1H2016
	18	5.33	2.08

How Effective of IT Adoption

Subject	Before	After
Medication Error	64 errors/months	4 errors/month
Correctness of Lab results	Almost everyday incident	Lower than 0.5%
Patient Complaint on waiting times	18 cases/month	2 cases/months
Patient Satisfaction	75%	89%
Patient Identification		reduce to 2 case/months
Completeness of medical record	90%	95%

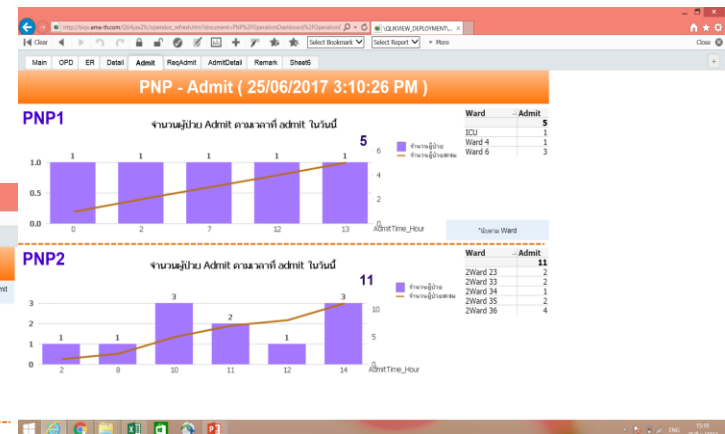
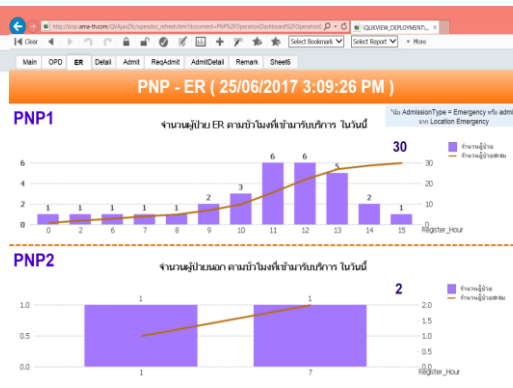
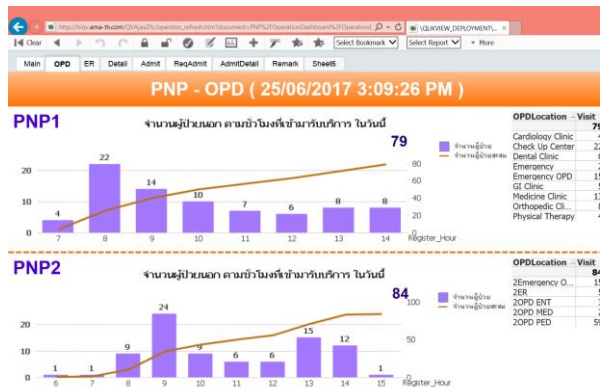
What happen at PNP after achieved HIMSS stage6 1 year ???



The power of data

Manpower Management

- Real Time Dash Board
- Nurse Productivity
- Man hr./job



Data For Financial Analysis

P&L	Target	QTD	%QTD	%YoY	%Growth	%QoQ
GROSS REVENUE	28.09 😞	8.84 -	-	+2.2% ↑	↑	+8.8% ↑
P&L	Target	QTD	%QTD	YoY	%Diff	QoQ
GROSS REVENUE	-	-	-	-	-	-
DIRECT MEDICAL SERVICE COST	-	-	-	-	-	-
DIRECT STAFF COSTS (Exc. MedSup)	-	-	-	-	-	-
Allocation from Med-Support Dept	-	-	-	-	-	-
OTHER DIRECT COSTS	-	-	-	-	-	-
TOTAL DIRECT COSTS	58% 😞	-	-	-	-	-
CONTRIBUTION MARGIN	42% 😞	-	-	-	-	-
SG & A	17% 😞	-	-	-	-	-
EBITDA	25% 😞	-	-	-	-	-
EBITDA (Exclude Doctor Fee Margin)	25% 😞	-	-	-	-	-

Unit : Million Baht

Unit : Million Baht 😞 < 80% 😊 80% - 90% 😌 > 90%

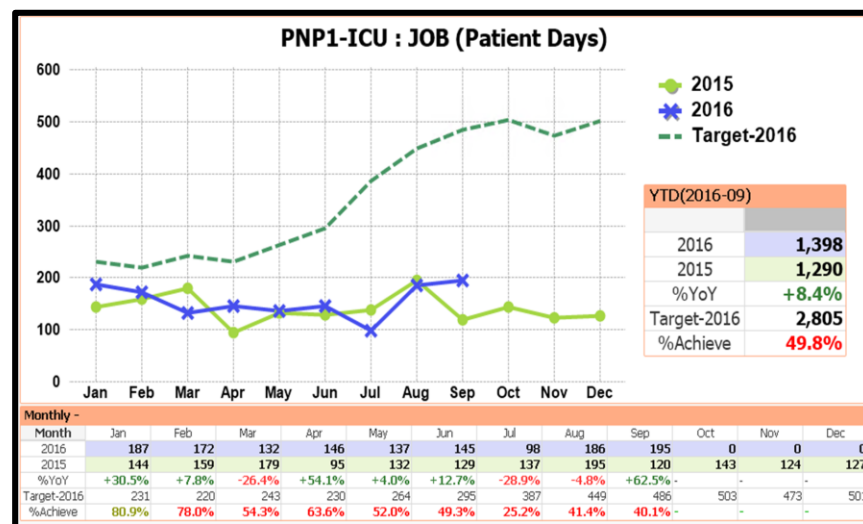
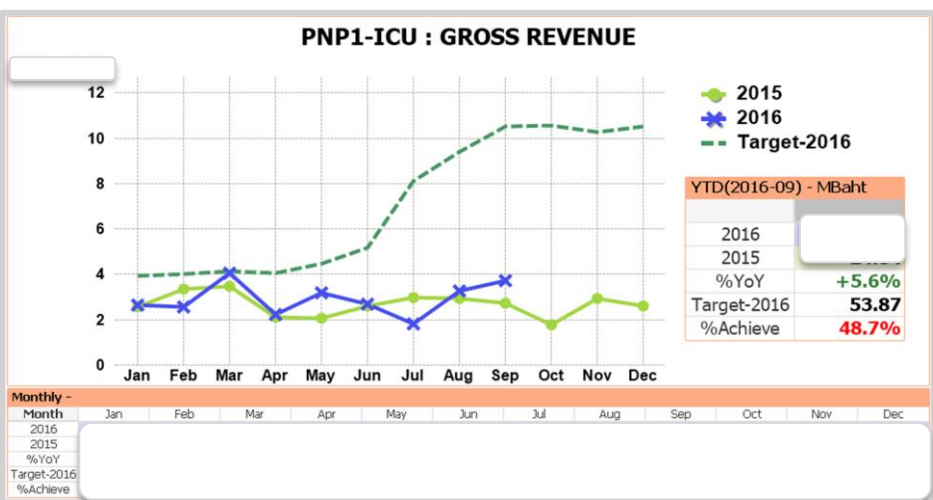
**Diff YoY = %QTD - %LastYear
%Diff QoQ = %QTD - %LastQuarter

KPI (JOB = Patient Days)	Target	QTD	%YoY	%Growth	%QoQ
JOB	1,321 😞	-	-	-	-
JOB per day	14 😞	-	-	-	-
REVENUE / JOB	21,000 😞	-	-	-	-
TOTAL DIRECT COSTS / JOB	-	-	-	-	-
DIRECT STAFF COSTS(Exc. MedSup) / JOB	-	-	-	-	-
EBITDA / JOB	-	-	-	-	-
REVENUE (Exclude Doctor Fee) / JOB	-	-	-	-	-
TOTAL DIRECT COSTS (Exc. Doctor Fee) / JOB	-	-	-	-	-
EBITDA (Exc. Doctor Fee Margin) / JOB	-	-	-	-	-
KPI	Target	QTD	YoY	%Diff	QoQ
% OT / SALARY - CLINICAL STAFF	-	3.08%	-20.8%	↓	-22.3% ↓
% RN FTE / TOTAL FTE	-	62.60%	+8.3%	-	+7.2% -

Unit : Baht

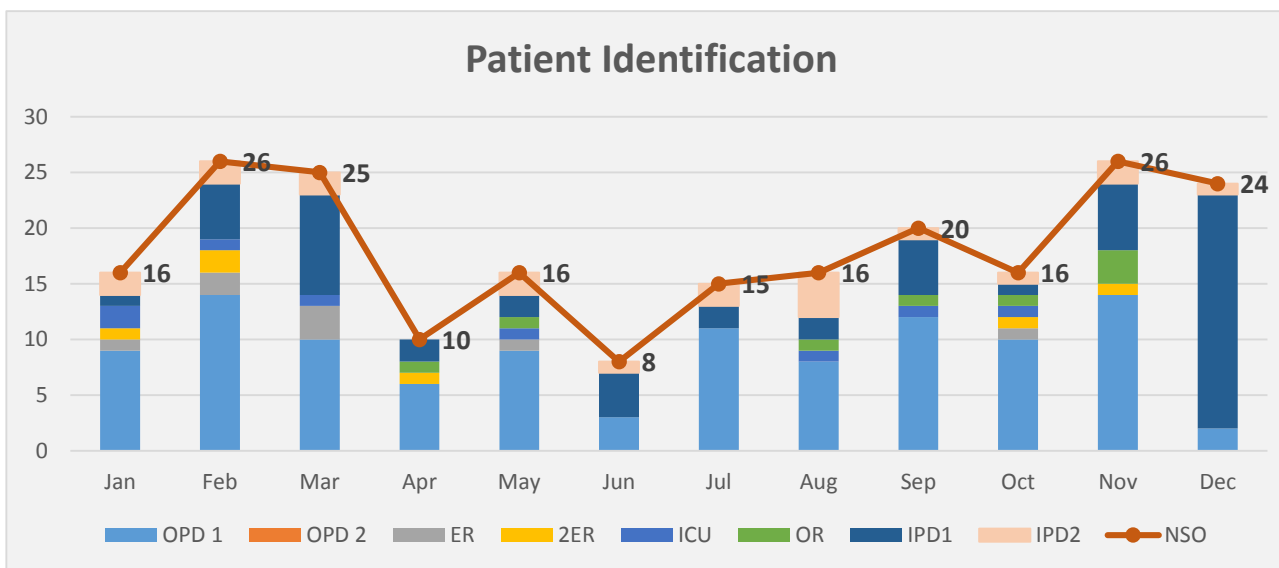
Unit : Baht 😞 < 80% 😊 80% - 90% 😌 > 90%

**Diff YoY = %QTD - %LastYear
%Diff QoQ = %QTD - %LastQuarter



Patient Identification Target OPD < 5:1,000visit ,IPD <2:1,000HD

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
No.IR	16	26	25	10	16	8	15	16	20	16	26	24	218



YTD

OPD 1= 2.76:1,000 visit

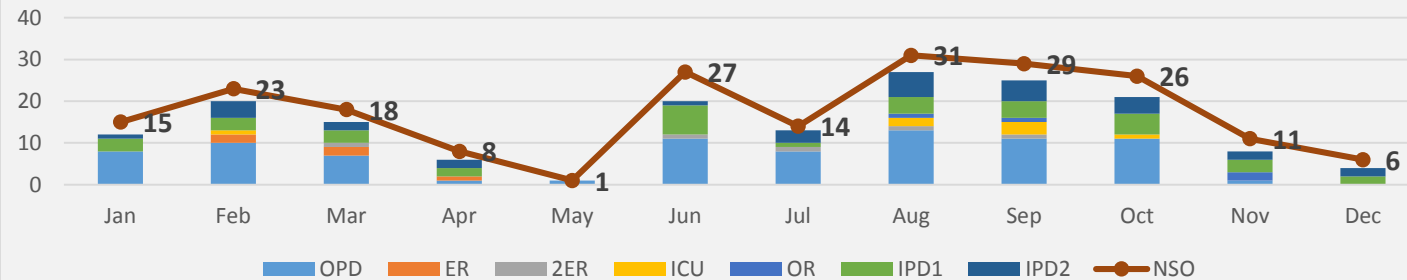
OPD2 = 0.98: 1,000 visit

IPD 1 = 4.30 :1,000 HD

IPD2 = 2.87 : 1,000 HD

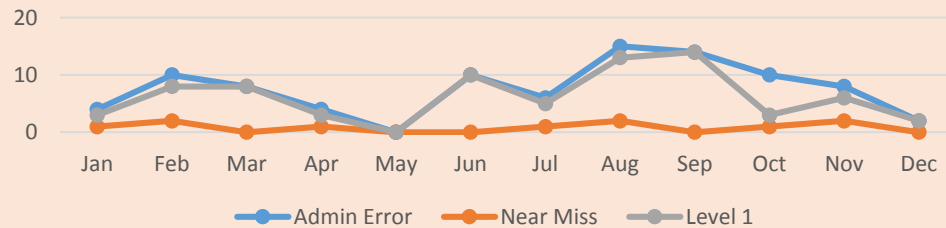
Administration error Target < 10:1,000 HD

Administration error by Department

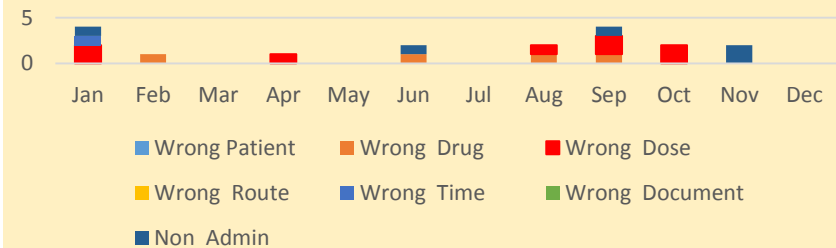


	Year
OPD	2.10
ER	0.16
2ER	0.18
ICU	3.59
OR	2.70
IPD 1	2.65
IPD 2	1.39

IPD1 Administration error by Level



Administration error by categories IPD1



Nurse Productivity ICU

PNP Nurse Productivity

10.1.8.107:8082/n_product/index.html#?ward=ICU

ICU | current IPD | input data | input staff | import data | previous data | Report+

Choose

Full: 02/07/2017

Time: 15:00-23:00

By period

All day

Detail

Date: 07/02/17

Time: 15:00-23:00

Census: 7

Require Hours: 12.76

Staff Hours: 19.80

% Productivity: 64.45

Actual total Staff: 4

Require total Staff: 2.58

Actual RN/PN: 3/1

Require RN/PN: 2.06/0.52

PNP Nurse Productivity

10.1.8.107:8082/n_product/index.html#?ward=ICU

ICU | current IPD | input data | input staff | import data | previous data | Report+

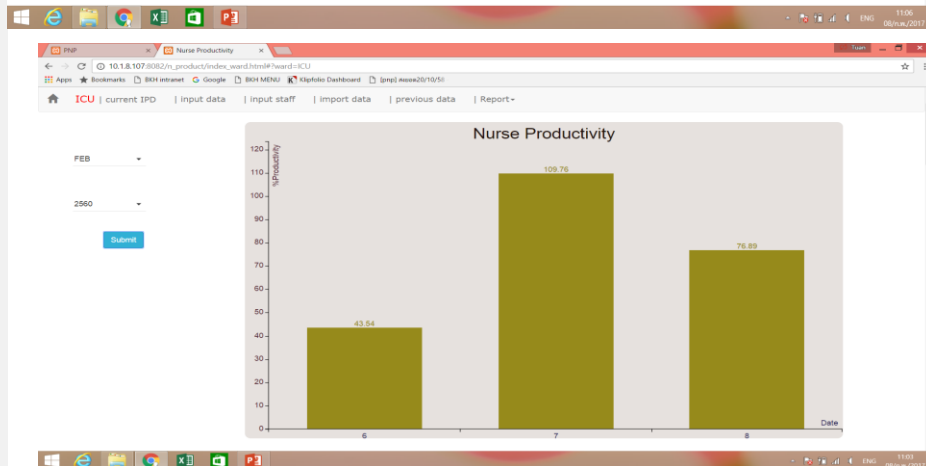
Full: 02/07/2017

Time: 15:00-23:00

By period

Patient on ward

Name	Class	Fall	Pain	Bedsore	Isolation	O2	Chest drain	ET
	class 3	Strict fall	mid pain	high risk	drug/need	Mask+bag	-	-
	class 4	Strict fall	mid pain	high risk	Contact	-	-	-
	class 2	Strict fall	mid pain	low risk	-	Canular	-	-
	class 3	Strict fall	mid pain	high risk	drug/need	Mask+bag	-	-
	class 4	Strict fall	mid pain	high risk	Contact	-	-	-
	class 2	Strict fall	mid pain	low risk	-	Canular	-	-
1-11	class 2	Strict fall	-	low risk	-	-	-	-



Smart ICU



Stepping to Thailand 4.0

การประชุมนวัตกรรมประจำปี 2560
เครือข่ายการพยาบาล : วิจัยและนวัตกรรมเพื่อนำไปสู่การพยาบาลที่เป็นเลิศในยุคไทยแลนด์ 4.0
"Nursing Network Forum : Research and Innovation for Nursing Excellence to Thailand 4.0"
วันที่ 8-9 มิถุนายน 2560

โรงพยาบาล ปากน้ำโพ "กันสอย ไวใจได้"

HIMSS Analytics 16

Electronic Nurse Documentation

เป้าหมายและวัตถุประสงค์

- ผู้ใช้งานได้รับการประเมินอย่างครอบคลุมและครอบคลุม
- ลดความเสี่ยงในการอ่านผิด โดยที่ผู้ปฏิบัติงานสามารถอ่านได้ในเวลาอันรวดเร็วโดยไม่ต้องรอคอย
- ลดปัญหาการอ่านผิดของยา ครอบคลุมถึงเอกสารเวชระเบียน
- ความสะอาดและความปลอดภัยในการเข้าถึงข้อมูล

วิธีการศึกษาดำเนินการ

01 ส่วนงานสนับสนุน Nursing Records ต่างๆ ER OPD ICU IPD

02 ให้ความรู้ อบรมการใช้งานระบบอิเล็กทรอนิกส์ในการบันทึกข้อมูล (eMAR)

03 มีการศึกษาและประเมินผู้ปฏิบัติงานที่เกี่ยวข้องกับการบันทึกข้อมูลในระบบ eMAR

04 การทำงานระบบเอกสารอิเล็กทรอนิกส์ IT Support เมื่อเกิดปัญหา Super User จะเป็นผู้แก้ไขปัญหาต่างๆ ระหว่างการใช้งาน

ผลลัพธ์ที่ได้รับ Outcomes

- 01 Real time management
- 02 Electronic alert & Identify Clinical Risks
- 03 Nurse Template Document
- 04 Interface -Medical devices

05 Determine workload & Productivity

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HIMSS Analytics 16

Electronic Medication Administration Record

Paknamo Closed Loop Medication Management System

Medication Reconciliation

Pharmacy

Semi - ADM

POC Administration (BCMA)

Right Patient

Right Drug

Right Time

Right Dose, Route

Right Record

Innovation eMAR Cart

ผลลัพธ์ที่ได้รับ Outcomes

- 01 Medication Safety
- 02 Real Time Medication Admin
- 03 Lean

Admin error by ward

2016 Ward 15 2016 Ward 16 2016 Ward 17 2016 Ward 18 2016 Ward 19 2016 Ward 20 2016 Ward 21 2016 Ward 22 2016 Ward 23 2016 Ward 24 2016 Ward 25 2016 Ward 26 2016 Ward 27 2016 Ward 28 2016 Ward 29 2016 Ward 30 2016 Ward 31 2016 Ward 32 2016 Ward 33 2016 Ward 34 2016 Ward 35 2016 Ward 36 2016 Ward 37 2016 Ward 38 2016 Ward 39 2016 Ward 40 2016 Ward 41 2016 Ward 42 2016 Ward 43 2016 Ward 44 2016 Ward 45 2016 Ward 46 2016 Ward 47 2016 Ward 48 2016 Ward 49 2016 Ward 50 2016 Ward 51 2016 Ward 52 2016 Ward 53 2016 Ward 54 2016 Ward 55 2016 Ward 56 2016 Ward 57 2016 Ward 58 2016 Ward 59 2016 Ward 60 2016 Ward 61 2016 Ward 62 2016 Ward 63 2016 Ward 64 2016 Ward 65 2016 Ward 66 2016 Ward 67 2016 Ward 68 2016 Ward 69 2016 Ward 70 2016 Ward 71 2016 Ward 72 2016 Ward 73 2016 Ward 74 2016 Ward 75 2016 Ward 76 2016 Ward 77 2016 Ward 78 2016 Ward 79 2016 Ward 80 2016 Ward 81 2016 Ward 82 2016 Ward 83 2016 Ward 84 2016 Ward 85 2016 Ward 86 2016 Ward 87 2016 Ward 88 2016 Ward 89 2016 Ward 90 2016 Ward 91 2016 Ward 92 2016 Ward 93 2016 Ward 94 2016 Ward 95 2016 Ward 96 2016 Ward 97 2016 Ward 98 2016 Ward 99 2016 Ward 100

Well known

Healthcare IT show case: Visitor 1-2/ months

Happy Work place

“Paknampo Hospital will a Modernized Digital Hospital of Southeast Asia”

“Provide reliable information for the organization to support clinical and strategic improvement”



Credit :

Assistant Professor. Korpong Rookkapan ,Hospital Director
Mrs.Tuanchai Kaewwanna, Assistant Hospital Director
Dr.Thanu Arayathaworn ,Medical Director and PNP Physicians
PNP Nursing Team
PNP Staffs



Thank
You!



Providing the Power to Care
MEDICOMP SYSTEMS®