Medical Device Integration in Singapore General Hospital

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Introduction

What is Medical Device Integration (MDI)?

An interoperable solution, where patient's vital signs are interfaced to Electronic Medical Records (EMR) over wireless/ wired connections.

Why MDI?

With the previous vital signs charting workflow:
- Nurses spend more time on the manual process of data collection and entry
- Manual entry increases chance of errors, leading to possible wrong treatment rendered.

With MDI introduced:
- Reduces possibility of transcription errors or missing data leading to patient safety issues
- Lesser time spent on manual charting of patient's vital signs

	05-Jun-2018 10:00	05-Jun-2018 11:00	05-Jun-2018 12:00
VITAL SIGNS			
Charting Frequency	1 Hourly		
☑ Temperature			
deg. C	36.2		
Source			
Thermal Regulation			
☐ Heart Rate			
beats/min	70	68	73
Rhythm			
Pacing			
☐ Respiration			
breaths/min	15	16	12
☐ Blood Pressure (NIBP)			
Systolic (mmHg)	138	132	138
Diastolic (mmHg)	72	65	68

Aims

To reduce manual transcription of patient's vital signs, therefore minimize transcription errors to EMR and time savings, leading to enhanced patient care and safety.

Method

Workgroup including Nursing Informatics (NI), Integrated Health Information System (IHIS), and Biomedical Engineering (BME) was formed in 2015. Two workflows were developed for General Wards and High Dependency/Intermediate Care Area/Intensive Care Units.

General Wards	HD/ ICA/ ICU
Windows tablet mounted on Dinamaps **OR** Welch Allyn with built in wireless capabilities	Philips monitors connected to Central Monitor Station, connected via Local Area Network (LAN)

Workflow

General Wards

Nurse log in to device using ADID
↓
Nurse scan patient's RFID tag (Visit ID)
↓
Nurse measure patient's vital signs with device
↓
Nurse validate readings, then submit via device
↓
Documentation creates automatically on EMR

High Dependency/ Intermediate Care Area/ Intensive Care Unit

Nurse scan patient's RFID tag (Visit ID) upon admission to unit
↓
Nurse hook up device and set monitoring interval
↓
Nurse creates column on EMR and "pulls in" readings (based on interval set on device)
↓
Nurse "End Case" on monitor when patient transfer out from HD/ ICA/ ICU

Results

The implementation was well received by the ward nurses, as it greatly reduces the amount of time for vital signs documentations and the occurrence of transcription errors.

Conclusion

WE ♥ MDI

With the introduction of MDI, nurses spends lesser time documenting vital signs in EMR, and more time to focus on patient care. The transcription errors has greatly minimized as results are interfaced automatically, therefore enhances patient safety.