Improve Workflow Efficiency by Implementing the Enhanced Patient Labels with 2D Barcode in NHCS Wards

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INTRODUCTION

The project was initiated by Assoc Prof Lim Soo Teik due to the potential of 2D Barcode or QR code technology in enhancing the delivery of healthcare for the better – saving resources, saving time and saving lives.

The code can store much more information than the traditional 1D Barcode and is easily scanned into healthcare systems for added benefits in medical identification.

Objectives:
- To pilot the use of the enhanced patient label with 2D Barcode in Ward 47B and subsequently roll out to other NHCS wards.
- Integrate 2D Barcodes scanning into electrocardiogram (ECG) tests to improve staff productivity, promote better data integrity and patient safety.

BACKGROUND

Traditional patient labels only comes with 1D Barcode which contains patient's unique identifier (e.g. NRIC number for Singaporean). 12 -Lead ECG tests which are routinely performed in NHCS inpatient wards require the scanning of the Barcode to tag patients for tests results and for billing.

Challenges of 1D Barcode
- ✕ After scanning the 1D Barcode into the ECG machine, additional demographic information of patient is needed to be keyed into the system manually by staff.
- ✕ Manual entry of data is time consuming, prone to data entry error
- ✕ Additional time is required for the rework to rectify data entry error

METHODOLOGY

RESULTS

Manpower Efficiency (Annual Savings)

900 Hours for Ward 44/CCU

450 Hours for Ward 56

365 Hours for Ward 47B

130 Hours for Short Stay Unit

Other Benefits

- ✓ Patient data is auto populated, it ensures accurate patient records in Heart Station.
- ✓ Eliminates data entry mistake as data is feed into the system
- ✓ Minimises data entry leading to enhanced staff productivity
- ✓ Facilitates better workflow leading to faster turnover of ECG tests which improves both staff and patient satisfaction

How it was Implemented...

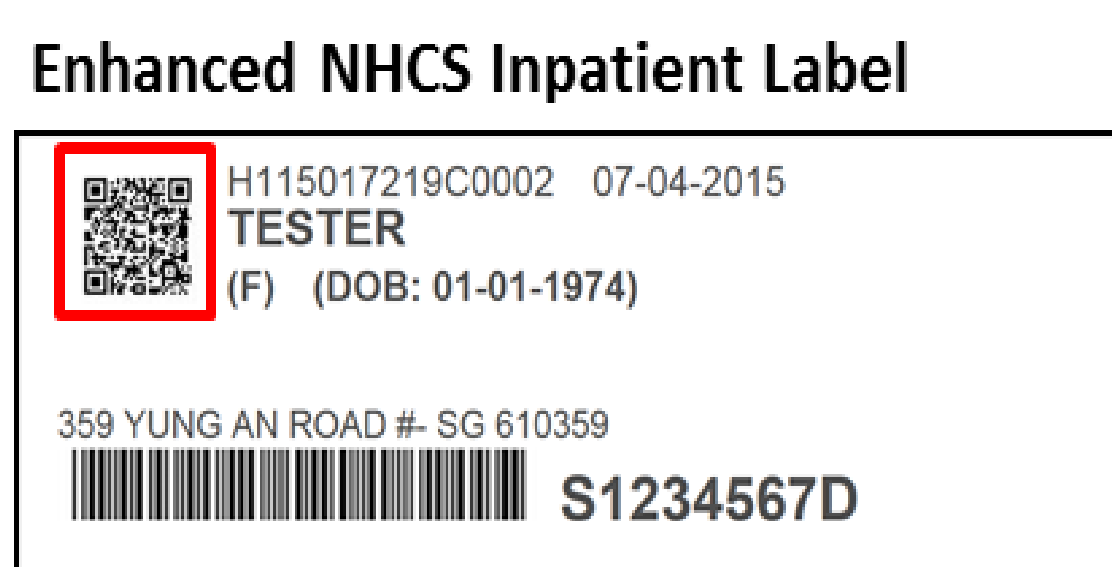|				
• Conceptual Design • Workflow studies • Stakeholder engagement • Design & development of 2D Barcode Generator - iCode	Training & equipping for Ward 47B staff	Pilot Implementation ward 47B	Survey, review & workflow refinement	Roll out to all NHCS Inpatient Wards & Short Stay Unit
November 2015 – March 2016	March 2016	28 March 2016	April 2016 – May 2016	11 May 2016

How it Works...

Patient admit to NHCS Ward →

Staff generates enhanced patient labels with 2D Barcode with in-house application – iCode

NHCS iCode

→ Staff prints the enhanced label and inserts label into patient wrist tag

Enhanced NHCS Inpatient Label

H115017219C0002 07-04-2015
TESTER
(F) (DOB: 01-01-1974)

359 YUNG AN ROAD #- SG 610359

S1234567D

1D Barcode is still available in the enhanced label for other functions

→ Patient info is scanned into ECG machine

Eliminates manuall entry of data saving 3 minutes each ECG scans

- ✓ NRIC
- ✓ Name
- ✓ DOB
- ✓ Gender
- ✓ Visit Number

FOLLOW UP & SUSTAINABILITY

- NHCS is working towards implementing 2D Barcode in the outpatient settings for cardiac lab investigations, nuclear imaging, cardiac catherisation imaging.
- Usage of 2D Barcode will be expanded into scanned medical records and other medical devices such as vital signs monitoring.
- 2D Barcode has potential to be implemented in other disciplines in SingHealth.

CONCLUSION

NHCS has proven that 2D Barcode can effectively improve the delivery of care. Since its implementation, the project has been well received by staff as 2D Barcode has improved their quality of work leading to better work efficiencies and better patient safety. Moving forward, 2D Barcode will be implemented in the outpatient setting by phases and more NHCS machines will be configured to read 2D Barcode. This allows more staff and patients to benefit from the project.

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