



LEE, Kah Keow OH, Hui Ping SEOW, Wan Tew

#### COLLABORATIVE WORKFLOW IMPROVEMENT ON PROGRAMMABLE SHUNT SAFETY FOR PATIENT UNDERGOING MRI

### Introduction

Programmable shunt valves, which have magnetically adjustable performance level settings, are increasingly

Pre & Post MRI Programmable Shunt Verification / Adjustment Workflow

being used in the treatment of hydrocephalus. These settings can change when patients implanted with these shunts are exposed to high magnetic fields during MRI scanning. Hence, after MRI scanning, their settings need to be verified by trained personnel. In a recent audit, four patients failed to have their shunts verified, with one patient suffering subdural hematoma from shunt overdrainage.

### Aim

To identify root causes for this failure. Create a multidisciplinary workflow for patients with programmable shunt undergoing MRI procedure to prevent future failure.

# **Methodology**



The following root causes for failure were identified:

- Lack of awareness in recognizing the presence of a programmable shunt
- Gaps in notifications of trained personnel

In Dec 2018, a new collaborative workflow was created after discussion with all stakeholders.

# **Improved Collaborative Workflow**

- All stakeholders in Emergency and Radiology Departments were trained to identify programmable shunt patients by means of patient's shunt wallet card and the hospital electronic medical record system.
- All staff stakeholders responsibilities are included.
- Steps identified in handling of situation if the shunt verification tool is not available on site.
- New post-MRI shunt precaution advice sheet if the

* Xxxxxx - 12345678	,		site	
* Xxxxxxx - 12345678	NSD Team will		<ul> <li>Requesting Dr need to weigh risk vs benefit and</li> </ul>	
NSD Nurse Contact (For NNI NRAD) • Xxxxxx – 12345678 • Xxxxxx – 12345678	<ul> <li>Arrange with vendor for shunt verification tool</li> <li>Liaise with Radiographer on Non-urgent MRI appointment</li> </ul>	<	<ul> <li>discuss with patient/NOK and document in CDOC</li> <li>If urgent, proceed with MRI</li> <li>Radiologist approval is not needed</li> </ul>	

\*The above flow chart has been displayed prominently with each relevant department

**Result** 

Since implementation of this new collaborative workflow in Dec 2018, there were nil incident reporting involving missed shunt valve verification post-MRI till Apr 2019.

Overall stakeholders satisfaction and maximized use of staff time when staff were educated to confirm presence of programmable shunts themselves, without the need to contact neurosurgery staff.

- trained personnel are unable to verify the setting immediately.
- Updated on the workflow chart are the contact numbers of trained support personnel for ease of support.

### **Conclusion**

New improved collaborative workflow involving all stakeholders improves patient safety with improved communications and better coordination to ensure that programmable shunt valve performance level settings after MRI were verified by trained personnel as soon as possible.