

# Health Roundtable

## Use of MISTAR Software for Stroke Imaging @ Redcliffe

**Organisation:** Redcliffe Hospital Medical Imaging

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**HRT 1910 – Imaging & Diagnostics Improvement Group**  
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# Key Problem

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- Redcliffe Hospital Patients had very limited access to Brain Perfusion imaging.
- This resulted in delayed decision making processes for patients who would benefit from clot retrieval.

# Aim of this Innovation:

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- Improve patient access to Brain Perfusion Imaging at Redcliffe Hospital 24/7.
- Reduce the complexity of the imaging requirements and post processing by using the automated software to process the perfusion imaging.
- Ensure all CT trained staff are able to perform the imaging required.
- Use automated software to help identify patients who would benefit from clot retrieval in a timely manner and provides clinicians with the information required to transfer these patients to a facility that offers a clot retrieval service.
- Provide an improved stroke imaging service for stroke patients presenting at Redcliffe Hospital.

# Reason for Innovation

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- Brain Perfusion Imaging was previously only performed during normal hours at Redcliffe Hospital.
- Radiologists onsite often had limited experience reporting CT Brain Perfusion.
- Limited radiographic staff were familiar with the software to process the perfusion imaging.
- Outsourced reporting: After-Hour CT reporting Provider does not report Brain Perfusion.
- Limited numbers of requests for BP imaging resulted in very limited training opportunities.
- During the extremely rare BP examinations, the situation was tense and stressful and made training challenging.

# Key Changes Implemented

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- Implementation and acquisition of the MISTAR software was a Statewide Stroke Clinical Network initiative
- Software was offered to Redcliffe Hospital Medical Imaging and the hospital Stroke Lead Physician requested installation and implementation.
- Redcliffe Hospital PACS administrator set up the site to use the MISTAR software effectively.
- Radiographers were trained to perform the imaging in an efficient manner to reduce time delays.
- Hospital implementation of a “Code Stroke” alert to all areas within the hospital who may need to respond.
- Hospital implementation of a pathway for patients who may also benefit from Lysis.
- Staff education and communication.

# Key Changes Implemented cont.

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- BP Images are sent directly from the CT scanner to MISTAR to facilitate speedy results.
- MISTAR results with the maps are sent directly to the Redcliffe Imaging PACS: approximate turnaround time is 3 minutes.
- Automated notifications are sent to selected practitioners at the time of scan
- Non Contrast CT Brain and CT Angio are always performed to identify any bleed and localise a visible clot suitable for retrieval: This assists clinicians in the decision making process.
- Local process implemented to transfer all imaging to clot retrieval site immediately and alert radiologists of “code stroke”.
- Radiologists focus on the Non Contrast Brain scan and CT angiogram reports.

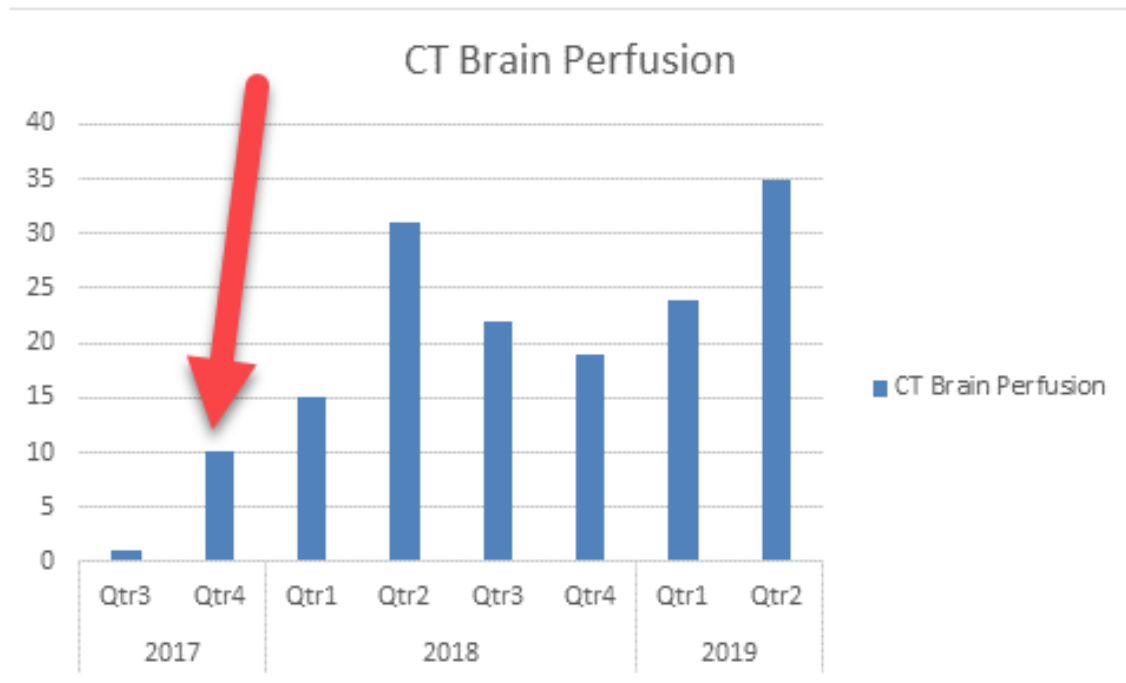
# Outcomes so far

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- Patient access to CT Brain Perfusion at Redcliffe Hospital has improved significantly: Simpler process to image and no limitations for reporting.
- Literature demonstrates the window that patients can benefit clinically from clot retrieval has increased to 24 hours after an acute stroke.
- This has widened the window of opportunity for the clot retrieval and the implementation of MISTAR has improved outcomes for Redcliffe patients.
- **Continual auditing of the process at Redcliffe hospital by the stroke team and the implementation of the “code stroke” alert has demonstrated a decrease in the door to CT times from >60 minutes to ~20 minutes.**
- MISTAR was first introduced at Redcliffe Hospital on 23/10/17.



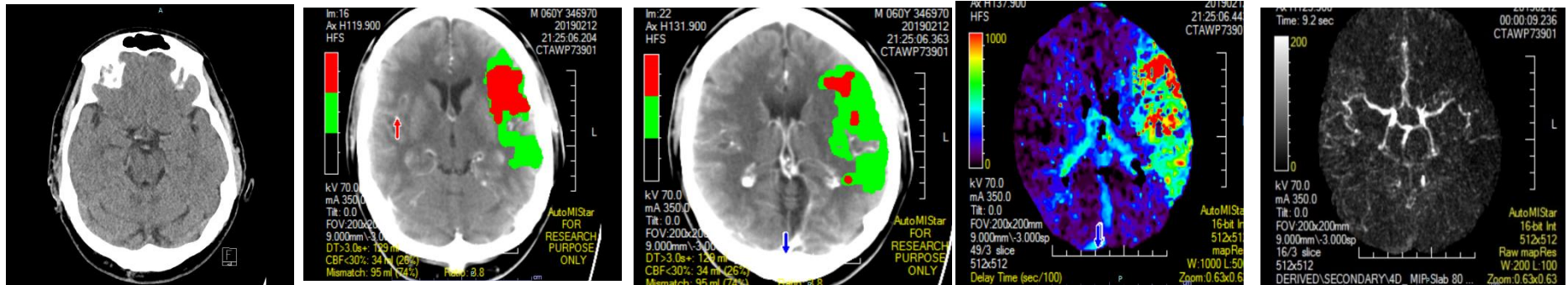
# Brain Perfusion Imaging at Redcliffe Hospital





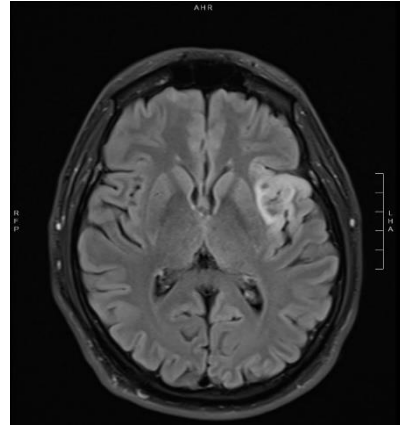
# Case Study Example

- 12/2/2019: 60y old male presented at Redcliffe Hospital ED at 21.30hrs with right sided weakness and loss of speech.
- Imaging completed with quick turnaround time.
- CT non contrast brain: No sign of a bleed.
- CT Brain Perfusion MISTAR results demonstrated a significant penumbra
- CTA demonstrated reduced blood flow from LMCA



# Case Study cont.

- Lysis commenced at Redcliffe Hospital as the patient was within the 6hr time frame.
- “Grey Blanket” – Immediate ambulance transfer to closest facility for clot retrieval.
- Successful clot retrieval.
- MRI performed the next day:  
Demonstrated small core infarct



- Speech returned gradually.
- Patient has returned to normal independent living.

# Lessons Learnt

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- Successful implementation requires multidisciplinary teams to work together to ensure the best outcomes for the patient.
- Active auditing of each case continues to identify any time delays helps streamline the process and reduces delays.
- Communication is key.
- MISTAR software: The Facility must always be logged in or the images will fail to send. This is a risk.
- There is currently nobody who has ownership of maintaining the software: This is a risk MNMI is seeking to resolve.

# Innovation Summary Slide

**Title: Use of MISTAR software for Stroke Imaging at Redcliffe Hospital.**

**Health Service: Redcliffe Hospital Medical Imaging**

Problem: Very limited Brain Perfusion Imaging service available at Redcliffe for our stroke patients.

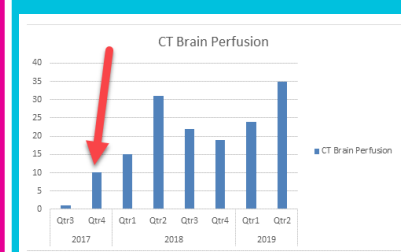
Solution: Implementation of automated software: MISTAR.

- Reduces radiologist and radiographer training required for imaging and reporting Brain Perfusion.

Results:

- *Improved stroke service for Redcliffe Hospital patients.*
- *Increased confidence for clinicians to transfer patients for clot retrieval*

*"Time is Brain"*



MISTAR introduced 10/17

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