

Health Roundtable

Endovascular Clot Retrieval (ECR) Improving Efficiency – Time is Brain

Organisation Real Name : Princess Alexandra Hospital

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**HRT1818 – Nursing Improvement Group
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Background

- Stroke is the 3rd leading cause of death in Australia (ABS, 2015)
- 1.9 million brain cells die every minute during an acute ischaemic stroke. If untreated, this can result in permanent brain damage
- Gold standard treatment for ischemic stroke is endovascular clot retrieval (ECR) performed through a radiological arterial approach (Berkhemer et al., 2015) to achieve reperfusion

Key problems

TIME	ECR is a time critical procedure with the key priority of staff to provide treatment to the patient as quickly as safely possible to ensure.
ACTIVITY	<p>Endovascular clot retrieval a rapidly growing service at PAH with a 50% increase in activity every year since 2013. In 2017 <u>48%</u> of all ECRs were undertaken at PAH with our service doubling every year since 2013.</p> <p>Window to treat has moved from 6 hours to 24 hours, based on evidence from the DAWN Trial (Nogueira et al., 2018)</p>
COMPLEXITY	<p>ECR involves complex equipment preparation and is a constantly evolving procedure</p> <p>Equipment stock levels must be closely monitored</p>
STAFF KNOWLEDGE DEFICITS	Through staff feedback (Medical, Nursing and Radiography) a knowledge deficit was identified regarding the procedure
MULTIPLE STAKEHOLDERS	Care for ECR stroke patients involves multiple teams with the patient being transported quickly through different locations and areas
STAFFING RESOURCES LIMITED	<p>ECR at PAH is a 24/7 service – to date no additional staff resources have been funded (significant workload concerns with fatigue leave impact, 2nd scrub nurse need and increasing activity)</p> <p>Current workforce allocation:</p> <ul style="list-style-type: none"> • 2 Nurses (scrub and scout) • 1 Neurointerventional Consultant • 1 Radiographer

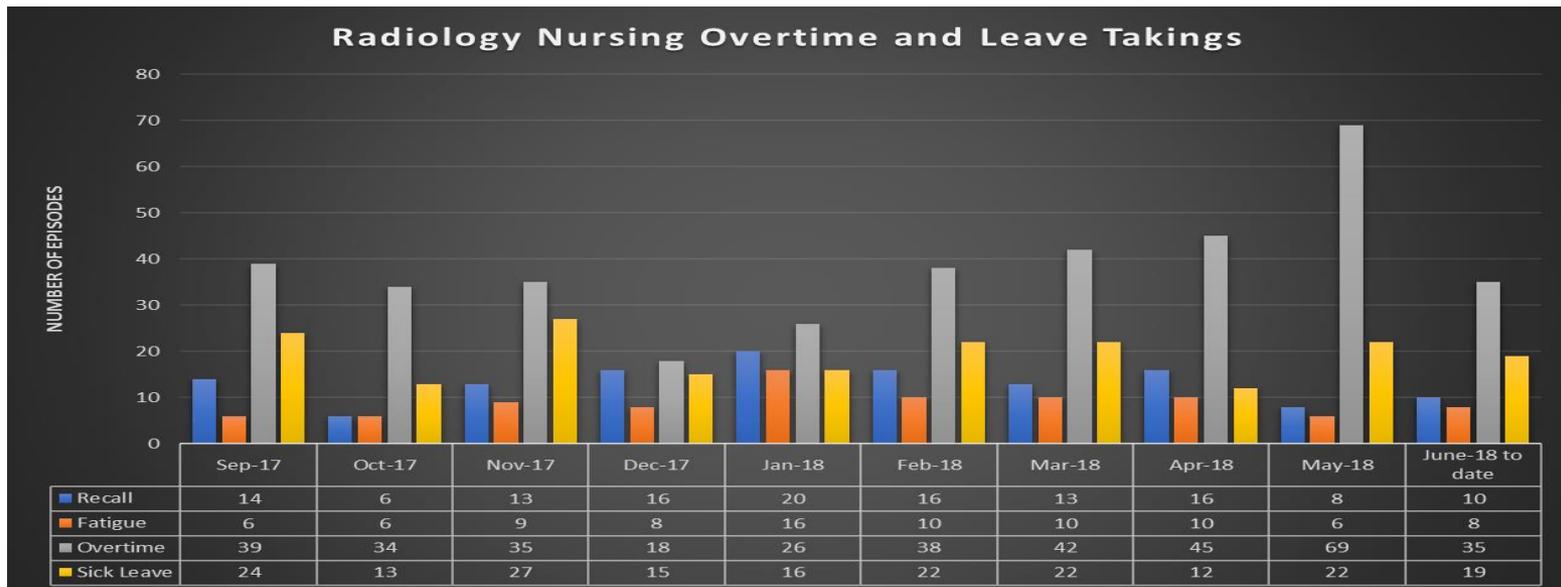
Aim of this Innovation

- Improve door-to-needle times to improve patient outcomes
- Create a team of highly skilled engaged Radiology staff with speciality training to enable a fast, efficient and safe procedural set-up with no additional resources
- Foster strong relationships with key stakeholders including Stroke Team, ED, Anaesthetics and Stroke Foundation
- Advocate for extra staffing allocation



Baseline Data

Year	ECR Activity
2013	2
2014	4
2015	13
2016	48
2017	93
2018	82 (to date)



Key Changes Implemented

Improving efficiency

- Equipment set-up streamlined
 - New procedural sterile bundles developed to minimise amount of equipment to be opened by scout nurse
 - Change of practice to no longer add medication additives for flush bags preventing further delay
 - Arterial pressure measurement via larger arterial sheath
 - Pictures of equipment set-up with clear instructions placed in sterile set-up area where easily referred to (especially at 2am!)
 - Improved on call arrangements through switch board to improve ease of contacting whole team quickly

Key Changes Implemented

Education

- Mock simulation sessions run by CNC/NUM and Neurointerventionalists to enable staff to experience procedure and set-up without anxiety
- Educational video developed by CNC and Neurointerventionalists detailing full equipment set-up and expectations of staff – staff able to watch video during downtime
- Practice equipment made available for staff to practice set-up
- ECR nursing staff competency assessments completed by CNC and NUM (May to October 2017)
- ECR learning package for Radiology staff currently in development

Key Changes Implemented

Staff Engagement

- NUM and CNCs facilitate/assist with all in-hours ECR
- 24/7 on-call support from CNCs and NUM for after-hours ECR (currently advocating for additional staff resources)
- Ongoing ward in-service provided to Anaesthetics, ED, PACU, Inpatient units and Stroke Unit
- Fostering strong relationships with the multidisciplinary team including Stroke Team through robust data collection and open lines of communication
- Meetings with key stakeholders including company representatives to source equipment in short time-frames (Jan 2016-ongoing)
- Benchmarking against other sites through webinars and conferences
- Working closely with Neuro-Interventionalists and Radiographers through post-ECR debrief
- Patient outcomes being achieved by the service are very visible to our frontline staff (follow-up)

Outcomes so far

Improved efficiency is directly impacting patient outcomes

Interventional Radiology to Needle to skin time

Year	In Hours	Afterhours	Average Time	Intervention
2017	19 mins	23 mins	21 mins	Saline IA flush bags Staff training commenced
2018	16 mins	18.5 mins	17 mins	Stroke Bundles Staff training completed
Overall Improvement	3 mins (5.7 million brain cells saved)	4.5 mins (8.55 million brain cells saved)	4 mins (7.6 million brain cells saved)	

AuSCR – Australian Stroke Clinical Registry Data

	PAH	AuSCR peers	Qld
Door-to-puncture time	52.5	49	74.5
Door-to-revascularisation time	120	109	150

Outcomes

Continued

- Door-to-needle time is 52.6 mins which is well above the state average (72.5 mins). National average is 49.6mins, for well-established sites
- Average time of arrival to the lab to needle to skin time is 16 mins including Anaesthetic induction (in-hours)
- 100% Radiology Nursing staff competent in ECR set-up
- Radiology Nursing staff report decreased levels of anxiety in regards to ECR, reflected in BPA staff satisfaction survey – maintained culture of success despite activity increase and workload concerns
- Business Planning Framework projected workforce requirement for Radiology partially funded and recruitment underway (enable to backfill sick leave and fatigue leave from within current establishment)
- Business case submitted for additional Nursing staff to meet ECR complexity and on-call requirements when benchmarked against other sites

Lessons Learnt

- Staff engagement is key for change – keep the patient at the centre of the rationale
- No further efficiencies are possible without additional staffing resources (e.g. extra staff on-call and rostered ‘stroke float nurse’ for Radiology)
- Increasing activity has had a direct impact on in-hours clinical resources as fatigue leave from Nursing staff, Radiographer and Radiologist is not backfilled or funded
- Stock turnover and stock levels need to be reviewed daily to ensure emergency equipment is available in a timely manner
- Clinical consumable costs are significant for each case which is a challenge from a budgetary perspective – different models need to be considered from a state-wide perspective e.g. activity based funding, investigations of rehabilitation cost savings
- Improved coordination when transitioning patient between health services is needed across South-East Queensland – look at modelling on Victorian approach

Innovation Summary Slide

Endovascular Clot Retrieval (ECR): Improving Efficiency – Time is Brain

Princess Alexandra Hospital, Metro South

Issue:

- ECR is rapidly increasing in activity at PAH. In 2017 48% of all ECRs were undertaken at PAH with our service doubling every year since 2013
- ECR is a time critical procedure ‘fast door-to-needle-to-skin time improves patient outcomes’
- Multiple stakeholders involved in process
- There was a knowledge deficit as it was a new, complex, constantly evolving procedure due to the lengthy and difficult equipment set-up
- No extra staff resources were available or funded

Solution:

- Education (in-service, mock simulation, learning packages and staff competencies)
- Equipment set-up streamlined
- NUM and CNCs facilitate/assist ECR
- Promote staff engagement – highlight outcomes for patients
- MDT relationships – ‘Code stroke’

Results:

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References

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