

Acute Kidney Injury (AKI)

Acute Kidney Injury is a sudden and recent reduction in a person's kidney function. It is estimated that approximately 100,000 deaths are associated with AKI each year with up to 30% of these being preventable with the correct care and treatment. NCEPOD (2009)

Aintree University Hospital NHS Foundation Trust has directed its attention to improving the care delivery of patients who develop AKI for approximately five years. The STOP-AKI project was triggered following a mortality analysis at the trust and joint collaboration with the Institute of Healthcare Improvement, Boston, USA. During this journey, Aintree have utilised quality improvement methodology to examine and refine each of the recommended investigations and interventions to ensure that patients who develop AKI are treated timely and effectively.

The Advancing Quality Alliance (AQuA) Advancing Quality (AQ) programme aims to ensure high reliability and reduce variation, through a structured approach to embedding evidenced-based care; enabling the highest quality of care to be provided to every patient, every time. The AQ AKI measures were devised in 2015 by a group of North West England clinicians who share a specialist interest in the disease area. This process was supported by the British Medical Journal (BMJ), and aimed to enhance the care that AKI patients receive through prompt diagnosis, action and referral to specialist services.

Aintree University Hospital NHS Foundation Trust are currently utilising the AQ AKI measure set to monitor care delivery for patients with AKI.

AKI Process Measures

- Urine dipstick test within 24 hours of 1st AKI Alert
- Stop ACE inhibitors and ARBs within 24 hours of 1st AKI Alert
- Serum creatinine test repeated within 24 hours of the 1st AKI Alert
- Ultrasound scan of urinary tract within 24 hours of 1st AKI Alert
- Specialist Renal or Critical Care Discussion within 12 hours of 1st AKI-03 Alert
- Written self-management information prior to discharge
- Pharmacist Medication Review within 24 hours of 1st AKI alert

The AQ AKI measures use the trust pathology results to capture all patients diagnosed as having an inpatient AKI. The AKI-03 patients are then extracted for use within the programme to monitor the care delivery. The pathology data is matched with the Secondary Users System (SUS) data to allow for the monitoring of patient outcomes. These include staging of the disease, mortality, readmissions and length of stay.





Aintree originally developed an automated e-alert system to notify teams when there was a rise in creatinine. This algorithm aligned with the national AKI algorithm that was launched and endorsed by NHS England in June 2014. The alerts appear live on the hospitals results reporting system and are then communicated to clinical teams and GPs. These alerts are also highlighted on the outreach specialist nursing team database.

Aintree are continuously reviewing and improving differing aspects of care through analysis of results generated from the AQ programme

Key Areas of Improvement

Avoidable Mortality Database

The avoidable mortality database is a centralised live expert system where all patients identified through test results and at risk of deterioration are stored. These can include patients where C-Reactive Protein (CRP) is raised, raised lactate or AKI alert. This system is refreshed four times per day and is reviewed by critical care outreach team, and patients are reviewed daily. The trust have an identified critical care nurse each day to review the AKI patients, thus ensuring that investigations are ordered and the patients are reviewed regularly.

Urine dipstick test

Each ward within the trust has been issued with an electronic urinalysis machine to ensure that results are reported timely and recorded in the patient record. As the measure examines care delivery from the first AKI alert which may not have been an AKI-03, it is evident that there has been extensive education undertaken internally with clinical teams to ensure that the AKI alert regardless of stage is actioned.

ACE inhibitors and ARBs

ACE / ARB medications are discontinued as soon as the patient alerts an AKI. This measure relies on the effective and timely communications between pathology teams and clinicians. Current compliance is 100% thus proving that communication within the organisation is efficient and judicious. There is preliminary work currently being undertaken to support GPs in restarting these medications post discharge.

Ultrasound scan of urinary tract within 24 hours of 1st AKI Alert

In order to ensure that all AKI patients regardless of stage have an Ultrasound scan performed when a cause is unknown there are clear channels of communication between clinicians and radiologists. Due to routine patient reviews undertaken by the critical care outreach, documentation of the cause of AKI, if known, is recorded in the patient records. For those patients who require an ultrasound scan outside normal working hours, a consultant to consultant referral or CT scan are options that can be used.

Written self-management information prior to discharge

All written self-management information is shared with the patient prior to discharge. The critical care outreach nurses deliver this information as part of discharge process and it includes reminders to patients regarding repeat blood to be undertaken post discharge.

Education and Communication

On examining the overall bundle approach for Aintree it is apparent that education and communication are key to their success. With over 86% of their AKI-03 population consistently receiving 'appropriate care', the systems and processes which have been embedded are functioning effectively.

Data to monitor performance

The results generated from the AQ programme are utilised to monitor the care delivery of the AKI population at Aintree. In examining each AKI-03 patient each month the team can be assured that excellent care is being delivered. Where there is a dip in a measure performance the team review results, identifying missed opportunities and work with clinical team to assess, plan and implement change.

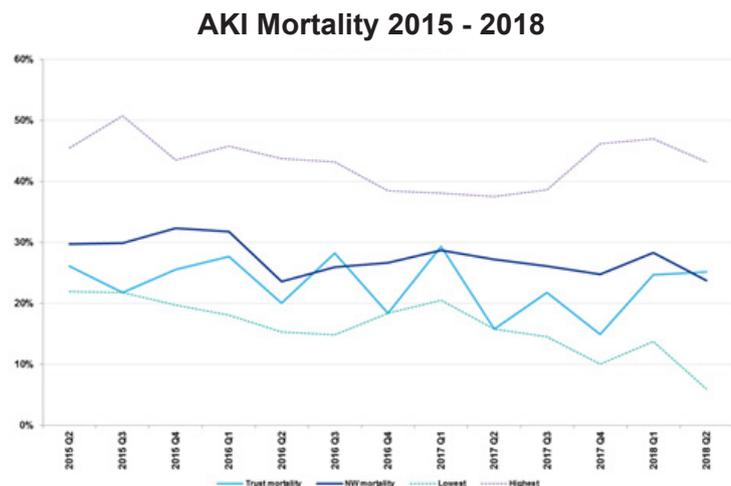
Future Programmes

Aintree plans to improve the follow up of AKI patients following discharge from hospital. The current system relies on the nephrology teams to review patients as inpatients then follow up in the Programmed Care Unit within 3 weeks of discharge. The revised patient pathway utilises the Advanced Nurse Practitioners to assess the referral for review post discharge and review patients post discharge. This process is streamlined with patients being reviewed as their condition dictates at a designated AKI clinic.

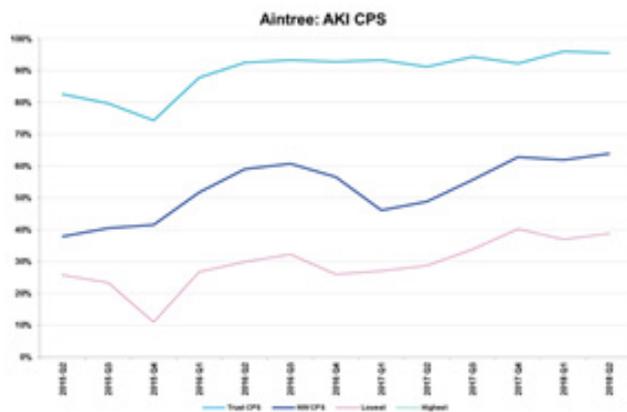
Summary

Aintree are on a continuous journey to improve the care delivery of patient with AKI, their AQ results are consistently high with CPS scores greater than 90% each month. This improved care delivery has had an impact on their patient outcomes when compared to the rest of the North West region.

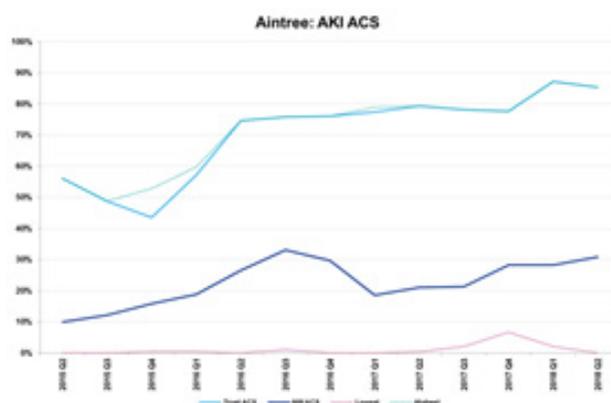
The AQ patients represented in the graph below have a lower mortality than other participating Trusts. In three of the quarters they were the lowest across the AQ cohort of trusts.



Aintree Composite Process Scores 2015-2018



Aintree Appropriate Care Score 2015-2018



Acute Kidney Injury (AKI) Case Study - January 2019

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