Utilisation of Renal Ultrasound Scans in Patients Presenting with Acute Kidney Injury:
Are we following NICE CG 169 recommendations?

Introduction.
Approximately 20% of all acutely unwell patients admitted to hospital will have acute kidney injury (AKI). Many of these patients will receive a renal ultrasound scan (RUSS) as part of their preliminary investigations. However, in many cases this is not indicated and does not assist in the management of the patient.

At University Hospital Southampton (UHS) a RUSS costs £47 and takes 17 minutes to perform. Thus not only are there cost implications incurred by performing unnecessary scans in patients in whom they are not clinically indicated but also a knock-on effect on waiting times for USS investigations that are necessary.

Aims
• Assess appropriateness of RUSS requesting in patients with AKI.
• Assess whether patients who met NICE criteria for RUSS were scanned within the recommended time frame.

NICE guidelines (CG169) Acute Kidney Injury: Prevention, Detection and Management

1.4.4 Do not routinely offer ultrasound of the urinary tract when the cause of the acute kidney injury has been identified.

1.4.5 When pyelonephritis (infected and obstructed kidney(s) is suspected in adults, children and young people with acute kidney injury, offer immediate ultrasound of the urinary tract (to be performed within 6 hours of assessment).

1.4.6 When adults, children and young people have no identified cause of their AKI or at risk of urinary tract obstruction offer urgent ultrasound of the urinary tract (to be performed within 24 hours of assessment).

Methods
Data was collected using coding for AKI & RUSS for a 3 month period.
• Patients we coded as having both AKI & RUSS.
• Data was collected over a 3 month period.
• 212 patients were identified from coding.
• Using random.org 80 patients were randomly selected and their notes reviewed.
• 24 patients were excluded as they have abdominal ultrasounds.
• Final sample size n=56.

Results.
56 patients were reviewed. All patients had RUSS with AKI documented as the reason for requesting the scan.
• 3 patients did not have AKI
• 44 patients had pre-renal AKI, of which 21 patients (48%) met guideline 1.4.6 for RUSS.
• 7 patients had suspected post-renal AKI
• 2 patients had suspected intrinsic AKI.
In total 30 patients met the guidelines for RUSS in AKI.

Patients Receiving RUSS
n=56

<table>
<thead>
<tr>
<th>Patients requiring RUSS n=30</th>
<th>Patients not requiring RUSS n=26</th>
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| Of the 30 patients who required RUSS
• 21 patients were pre-renal (14 of these received RUSS < 24 hours as per guidance 1.4.6)
• 7 patients were post-renal (2 patients < 6 hours, 4 patients 6-24 hours, 2 patients > 24 hours as per guidance 1.4.5)
• 2 patients were intrinsic (1 patient received USS <24 hours) |

Patients Receiving RUSS
Within NCG 169 Recommended Time Frame
n=56

<table>
<thead>
<tr>
<th>Within guideline time limit n=18</th>
<th>Outside of guideline time limit n=38</th>
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<td>33%</td>
<td>67%</td>
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Conclusions
• There is a lack of knowledge about which patients require RUSS
• RUSS are not cancelled, even when the patients creatinine improves.
• 100% patients with suspected post-renal obstruction did not receive RUSS within 6 hours.

Limitations
Only patients identified as having had AKI & RUSS through coding were assessed. Accuracy of coding data compared to AKI audit data would suggest that there are more patients with AKI than are correctly coded. This will be addressed at re audit.

Lessons Learnt
Coding to identify patients does not always yield a complete patient cohort. Other methods of identifying patients should be considered for an accurate data set.

Changes in Practice
As a result of this audit the following has been implemented.
• Focussed AKI education trust wide.
• Highlight NICE recommendations for renal USS in AKI via a poster displayed in high-requesting areas e.g. Acute Medical Unit
• Implement a change to the current electronic USS request form to ensure that USS are requested appropriately. This could lead to a cost saving of £14,000 by reduction in unnecessary RUSS alone.

Poster displayed in admission areas.