Recording, coding and commissioning of acute kidney injury (AKI) activity:
Report for discussion

October 2012
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<tr>
<th><strong>Title</strong></th>
<th><strong>Recording, coding and commissioning of acute kidney injury (AKI) activity</strong></th>
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</thead>
</table>
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| **Publication date** | October 2012 |
| **Target audience** | Commissioners, clinical coders and clinicians |
| **Circulation list** | Providers: Clinical and nursing leads, clinical coders.  
Commissioners: CCGs, PCTs and specialist commissioning groups |
| **Description/purpose** | To set out how patients with AKI should be identified through clinical coding, the resultant commissioning HRGs that are generated, and how the visibility of AKI can within commissioning can be improved. |
| **Cross Ref** | www.connectingforhealth.nhs.uk/systemsandservices/data/clinicalcoding  
http://www.kidneycare.nhs.uk/_Resourcestodownload-Reports.aspx |
| **Superseded docs** | n/a |
| **Action required** | Clinicians, coders and commissioners should follow the recommendations outlined in this report in order to improve the accurate recording and coding of AKI, which will result in improved patient care and significant cost savings within the NHS. Feedback is also requested to the key question posed by this paper: should AKI be more visible within the commissioning process? Responses should be sent to admin@kidneycare.nhs.uk |
| **Timing** | The report’s recommendations should be implemented immediately. |
| **Contact details** | admin@kidneycare.nhs.uk |
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1. Introduction and background

Acute kidney injury (AKI) produces significant financial costs for the NHS. People with AKI have longer hospital stays, are more likely to receive critical care and are at increased risk of long term health problems.

In her report *The Economic Impact of Acute Kidney Injury* (not yet published), NHS Kidney Care health economist Marion Kerr estimates how much the NHS in England spends on AKI in a year, using datasets like Hospital Episode Statistics (HES) and reference costs. She has calculated the national cost of AKI at between £434 million and £620 million per annum.

AKI has traditionally been under recognised and expert opinion suggests routine coding datasets are likely to miss many cases. HES data for all hospital admissions (with at least one night’s stay) show that in 2009-10, 120,000 hospital admissions had a coded episode of AKI. If one extrapolates evidence of AKI incidence in hospitalised patients from published epidemiological studies, it is likely that a more accurate estimate would be 360,000 AKI episodes in this period.

AKI appears to have poor visibility within the commissioning process. Of the 120,000 admissions which included a diagnosis of AKI, only 21,000 were grouped to a set of Healthcare Resource Groups (HRGs) representing AKI. As such it is estimated that commissioners have visibility through the commissioning process of as little as 17.5% of AKI activity that is currently recorded.

This report aims to highlight how patients with AKI (developed at different stages) are (or rather should be) identified through clinical coding, and the resultant commissioning HRGs that are generated.

We will demonstrate these points through a series of detailed clinical examples. The report also contains an introduction to clinical coding and its importance as well as a summary of the current visibility of AKI cases in the commissioning process. Finally, we have listed useful reference materials and links to further sources that will be useful to commissioners.

It is important, both for patient care and for ensuring best use of NHS resources, that the recording and clinical coding of AKI improves. In addition, AKI should be more visible within the commissioning process enabling commissioners to play a more active role in prevention.

Key actions that should be taken include –

- Accurate recording of AKI within patient notes – this includes whether the clinical diagnosis of AKI is referring to a traumatic injury or the more historically familiar term of acute renal failure.
- Consistent and correct coding of AKI so it is grouped to the correct HRG.
- Use of the AKI resource pack developed by NHS Kidney Care to assist clinicians, renal managers and service improvement teams in recognising, recording and treating AKI.
- Ensuring commissioners and providers work together to regularly monitor the volumes of patients with AKI diagnoses, outside the regular commissioning data flow.

By following the recommendations in this paper we hope that a substantial improvement in the accurate recording and coding of AKI can be achieved, leading to widespread improvements to patient care and significant cost savings within the NHS.
2. Recording and coding of clinical activity

Clinical coding and its importance

The NHS Classifications Service is the definitive source of clinical coding standards and guidance for clinical classifications ICD-10 and OPCS-4:

- ICD-10 is the internationally defined set of codes for diagnostic clinical data
- OPCS-4 is the UK-specific set of codes for surgical interventions and procedures.

Information about a patient’s condition and treatment are made in the patient’s medical record by the responsible consultant. Coders use these medical records, other clinical records, local databases and correspondence (such as discharge letters) to extract the patient’s clinical information and translate this into the correct codes to record their complaint, diagnosis and treatment for each episode of care.

Accurate records are important because they are the primary source of information for all healthcare professionals and may form the basis of a discharge summary to inform the patient’s GP of the treatment provided in hospital. Accurate coding, consistent with national standards, ensures that:

- units are able to easily report activity based on the national casemix measures (the classification recognised by commissioners and finance teams)
- accurate information related to patient care is reported to commissioners
- national reference cost returns (relating to kidney care) are as accurate as possible.

Coded data has many uses, as shown in this diagram from NHS Connecting for Health:
2. Recording and coding of clinical activity

What should be recorded

The responsible consultant should record all information on a patient’s diagnoses, including any comorbidities, as accurately and completely as possible for each episode of care. To support the clinical coder, the responsible consultant should ensure the information they record:

- is clear, detailed and as comprehensive as possible
- accurately reflects the care the patient has received
- avoids the use of abbreviations where possible
- is legible and in pen, if hand-written (not pencil, as this fades).

Coders should take into account all the information available about a patient’s episode of care and ensure they are coding accurately and in line with the latest classification version, rules and national standards.

Any comorbidity (a condition in addition to the primary disease or disorder) that affects the management of a patient and contributes to an accurate clinical picture of their current consultant episode must be recorded within the patient’s medical record. Conditions that relate to an earlier episode but do not have a bearing on the current episode should not be recorded.

A fundamental coding principle is that acute conditions will always affect the patient’s episode of care and will always be coded when documented in the medical record. Therefore where a diagnosis of Acute Kidney Injury has been recorded, at any stage during the patients hospital provider spell, it must always be coded.

Within the ICD-10 the term Acute Kidney Injury is not specifically classified and coders are advised to code a diagnosis of Acute Kidney Injury to Acute Renal Failure. This guidance can be found in the National Clinical Coding Standards ICD-10 4th Edition reference book (page XIV-4), as follows:

Acute renal failure/acute kidney injury

Acute kidney injury (AKI) is the preferred term used by responsible consultants to describe acute renal failure (ARF). When the term ‘Acute Kidney Injury’ is index trailed in ICD-10 the coder is directed to a traumatic injury code. However, in the majority of instances, the responsible consultant documenting the condition of AKI is referring to the non-traumatic condition of acute renal failure. It is therefore important that when a diagnosis of AKI is documented in a patient’s medical record, and it is not clear whether the clinical diagnosis of AKI is referring to a traumatic injury or the more historically familiar term of acute renal failure, the coder must confirm the diagnosis with the responsible consultant before code assignment is made.
3. Recording and coding of AKI

Examples

Recording and coding of AKI – examples

The case studies below (clinical scenarios 1 to 6) identify how AKI should be recorded, is currently coded and the subsequent HRGs that are generated. The examples give the ICD-10 4th Edition codes (diagnosis) and OPCS-4 codes (procedure). The 2012/13 Local Payment Grouper has been used to generate the HRGs.

The coding of AKI can be complicated and may involve the application of both specific and general national standards, rules and guidance which have not been included in these examples to avoid confusion.

The diagnoses and procedures in the tables are for the different elements of care over a period of time and not strictly separated for each attendance or consultant episode.

The sequencing of ICD-10 codes provided in these tables may change depending on the main condition treated or investigated. It may also be possible that certain procedure codes would either be added or excluded depending if any other procedures were performed concurrently or during the same episode of care or according to certain classification standards.

It should be noted that there is a proposal to include HRGs for dialysis for acute kidney injury in the next Reference Cost Grouper (2012/13). These will be unbundled HRGs specific to haemodialysis and peritoneal dialysis which will be generated for each session recorded in addition to the core HRG for admitted patients.

Clinical scenarios

Note: In each of the following scenarios a condition present before AKI develops, develops due to AKI or after AKI is diagnosed, does not affect ICD-10 code assignment. The codes should be the same. However, the sequencing (and the ultimate HRG to which the codes are grouped) depends on the main condition treated. Note if any other condition(s) or comorbidities are present that this would have an effect on the final code assignment.
### Scenario 1

**Low severity AKI. Patient admitted with severe dehydration, AKI identified – patient recovers kidney function**

- A 53 year old patient presents via A&E to a district general hospital with severe dehydration due to vomiting and diarrhoea. The likely cause is identified as food poisoning. The patient is commenced on intravenous fluid therapy.

- A blood test reveals a level of serum creatinine which is 2 x the normal level for the patient. AKI is diagnosed – there is no known previous history of AKI.

- The patient is admitted to a general medical ward. Basic investigations include urinalysis and renal ultrasound, which is performed within 24 hours as per National Imaging Board guidelines. Fluid therapy is continued and creatinine levels in blood are monitored regularly.

- After 48 hours, the serum creatinine has fallen to a normal level. This is close to the patients known baseline creatine level and the clinical team surmise the patients kidney function has fully recovered. The patient is discharged after three days with planned GP follow up in the community.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Recorded by clinician in medical record</th>
<th>Specific notes on recording</th>
<th>Examples of ICD-10 and OPCS-4 codes assigned by clinical coder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute kidney Injury</td>
<td></td>
<td></td>
<td>N17.9 Acute renal failure, unspecified</td>
</tr>
<tr>
<td>Severe dehydration</td>
<td></td>
<td></td>
<td>E86.X Volume depletion</td>
</tr>
<tr>
<td>Food poisoning</td>
<td></td>
<td></td>
<td>T62.9 Noxious substance eaten as food, unspecified</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>X49.9 Accidental poisoning by and exposure to other and unspecified chemicals and noxious substances, unspecified place</td>
</tr>
</tbody>
</table>

**Core HRG = LA07G Acute Kidney Injury with Intermediate CC without Interventions**

Note: Ultrasounds are not coded as part of an inpatient episode. They are only coded if performed in an outpatient setting or if the patient is admitted solely for ultrasound (OPCS-4 Clinical Coding Instruction Manual (Version 4.0)).
Scenario 2

Patient develops AKI with complications whilst in hospital - recovers kidney function

- A 58 year old patient is admitted electively for a planned right hip replacement for primary osteoarthritis of both hips.

- They are treated with NSAID analgesia and suffer a post-operative lower respiratory tract infection.

- Five days after admission a routine blood test reveals a high level of serum creatinine (2 x the preoperative level for the patient). AKI is diagnosed.

- Intravenous fluid therapy is commenced. A urinary catheter is inserted and the patient’s urine volume is measured hourly. A urine dipstick and renal tract ultrasound is performed.

- After a subsequent rise, the serum creatinine level falls back to normal after five days. The patient continues postoperative orthopaedic rehabilitation and is discharged to GP community follow up. The total length of stay is 20 days.

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<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Diagnosis</td>
<td></td>
<td></td>
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<tr>
<td>Primary osteoarthritis of hips</td>
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<tr>
<td>Post operative lower respiratory tract infection</td>
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<tr>
<td>Acute kidney injury</td>
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<tr>
<td>Procedure/clinical intervention</td>
<td></td>
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<tr>
<td>Replacement of right hip using cement</td>
<td></td>
<td></td>
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<tr>
<td>Insertion of urinary catheter to measure urine output</td>
<td></td>
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<tr>
<td>M16.0 Primary coxarthrosis, bilateral</td>
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<tr>
<td>J22.X Unspecified acute lower respiratory infection</td>
<td></td>
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<tr>
<td>Y83.1 Surgical operations with implant of artificial internal device as the cause of abnormal reaction of the patient, or of later complication, without mention of misadventure at the time of the procedure</td>
<td></td>
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<tr>
<td>N17.9 Acute renal failure, unspecified.</td>
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<tr>
<td>W37.1 Primary total prosthetic replacement of hip joint using cement</td>
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<tr>
<td>Z94.2 Right sided operation</td>
<td></td>
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<tr>
<td>M47.4 Urodynamic studies using catheter</td>
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</tbody>
</table>

Core HRG = HB12A Major Hip Procedures for non Trauma Category 1 with Major CC

Note: Ultrasounds are not coded as part of an inpatient episode. They are only coded if performed in an outpatient setting or if the patient is admitted solely for ultrasound (OPCS-4 Clinical Coding Instruction Manual (Version 4.0))
Scenario 3

Patient develops AKI with complications whilst in hospital - does not recover kidney function

- A 73 year old patient is admitted as an emergency for endovascular repair of aortic aneurysm (EVAR). The patient has a history of peripheral vascular disease and CKD stage 3 due to hypertensive nephropathy.
- The patient is given iodinated contrast intravenously as part of the EVAR procedure and is severely hypotensive during the early stages of admission, in spite of fluid resuscitation.
- During the post operative phase the patient develops oliguria and AKI 3 (a more than 3 x increase in serum creatinine from baseline), with associated hyperkalaemia and pulmonary oedema. The latter are medically managed with intravenous frusemide and insulin and dextrose.
- The patient is urgently referred to the onsite renal service for emergency dialysis. Six dialysis sessions are administered through a temporary vascular access catheter (non tunnelled). There is no evidence of recovery of kidney function and a tunnelled vascular access catheter is inserted for dialysis access.
- After 20 days the patient is discharged to a satellite kidney centre for ongoing dialysis, with a home-care package.
- The patient continues dialysis three times per week in the satellite unit. The patient is readmitted and an AV fistula is formed and the tunnelled access catheter is removed. There is no recovery of renal function and lifelong dialysis is required.

3. Recording and coding of AKI

Examples
### 3. Recording and coding of AKI

#### Examples

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<tbody>
<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thoracic aortic aneurism</td>
<td></td>
<td>I71.2 Thoracic aortic aneurysm, without mention of rupture</td>
</tr>
<tr>
<td>Acute kidney injury</td>
<td></td>
<td>N17.9 Acute renal failure, unspecified.</td>
</tr>
<tr>
<td>Chronic kidney disease (stage 2) due to hypertension</td>
<td></td>
<td>N18.2 Chronic kidney disease, stage 2</td>
</tr>
<tr>
<td>Peripheral vascular disease</td>
<td></td>
<td>I12.0 Hypertensive renal disease with renal failure</td>
</tr>
<tr>
<td>Pulmonary oedema</td>
<td></td>
<td>I73.9 Peripheral vascular disease, unspecified</td>
</tr>
<tr>
<td></td>
<td></td>
<td>J81.X Pulmonary oedema</td>
</tr>
<tr>
<td><strong>Procedure/clinical intervention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insertion of one endovascular stent graft into thoracic aorta under radiological control</td>
<td>Date of each session of haemodialysis should be recorded</td>
<td>L27.3 Endovascular insertion of stent graft for thoracic aortic aneurysm</td>
</tr>
<tr>
<td>Temporary non tunneled vascular catheter</td>
<td></td>
<td>O20.3 Endovascular placement of one stent graft NEC</td>
</tr>
<tr>
<td>Haemodialysis as inpatient (6 sessions)</td>
<td></td>
<td>Y53.1 Approach to organ under radiological control</td>
</tr>
<tr>
<td>Tunnelled line</td>
<td></td>
<td>L91.2 Insertion of central venous catheter NEC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Y70.5 Temporary operations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>X40.3 Haemodialysis NEC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: X40.3 must be coded six times here. A code from category X40.- Compensation for renal failure must be assigned every time dialysis is carried out.</td>
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<tr>
<td></td>
<td></td>
<td>L91.5 Insertion of tunnelled venous catheter</td>
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</tbody>
</table>

**SPELL 1 Core HRG = QZ01A Aortic or Abdominal Surgery with CC**
The HRG generated from this scenario depends on whether the patient is classed as having CKD or not (note: current clinical consensus is that a patient would move from AKI to CKD if no recovery at 3 months) – if so and the activity is recorded in the renal dataset then each session would generate: **Core HRG = LD05A Satellite Haemodialysis/Filtration with access via haemodialysis catheter 19 years and over.**

However, if this patient’s activity was not recorded in the NRD then each session would generate: **Core HRG = LA07G Acute Kidney Injury with Intermediate CC without Interventions.**

However, for commissioning purposes, as this person is solely attending for dialysis (regular attender) then this activity would probably be excluded from PbR and be part of local negotiation.
3. Recording and coding of AKI

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<td></td>
<td>J81.X Pulmonary oedema</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>I73.9 Peripheral vascular disease, unspecified</td>
</tr>
<tr>
<td>Procedure/clinical intervention</td>
<td>Left sided radiocephalic fistula creation</td>
<td></td>
<td>L74.2 Creation of arteriovenous fistula NEC</td>
</tr>
<tr>
<td>Tunnelled line removed</td>
<td></td>
<td></td>
<td>Z95.4 Radial artery</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Z91.1 Cephalic vein</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Z94.3 Left sided operation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>L91.4 Removal of tunnelled venous catheter</td>
</tr>
</tbody>
</table>

Core HRG = QZ13A Vascular Access for Renal Replacement Therapy with CC
3. Recording and coding of AKI

Examples

Scenario 4
AKI develops whilst in hospital and requires ITU - patient does not fully recover kidney function but does not require continued dialysis

• A 48 year old patient with diabetes presents to A&E with an acute abdomen. This is shown to be due to diverticulitis with a generalised peritonitis. The patient is admitted to a surgical ward. A laparotomy is performed and the patient undergoes a hemicolecctiony with formation of a defunctioning colostomy.

• Following this, the patient is on ITU for five days requiring inotropic cardiovascular support. The patient develops acute kidney injury requiring renal replacement therapy. A temporary vascular access catheter (non tunneled) is inserted to perform continuous enousvenous haemofiltration.

• The patient has 12 sessions of haemofiltration and, when other organ support is able to be withdrawn, is then transferred to the renal ward for continued intermittent haemodialysis. Ten sessions of haemodialysis are given. The patient is an inpatient on the renal ward for 20 days in total and becomes dialysis independent two days before discharge.

• The patient is discharged and does not require further dialysis.

• They are followed up in renal clinic. Renal function does not recover completely and they are diagnosed with CKD stage 2 at six months follow up.
### 3. Recording and coding of AKI

#### Examples

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</thead>
<tbody>
<tr>
<td>Diverticulitis of small intestine with generalised peritonitis</td>
<td>Diverticular disease of small intestine, part unspecified with perforation and abscess</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute kidney injury</td>
<td>N17.9 Acute renal failure, unspecified.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Procedure/clinical intervention</th>
<th>Recorded by clinician in medical record</th>
<th>Specific notes on recording</th>
<th>Examples of ICD-10 and OPCS-4 codes assigned by clinical coder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colectomy and an endcolostomy</td>
<td>ICU clinicians would add details of treatments to patient record</td>
<td>H11.5 Colectomy and exteriorisation of bowel NEC</td>
<td></td>
</tr>
<tr>
<td>Temporary non tunnelled vascular catheter</td>
<td></td>
<td>H15.2 End colostomy</td>
<td></td>
</tr>
<tr>
<td>Haemofiltration (12 sessions)</td>
<td>Date of each session of haemofiltration should be recorded</td>
<td>L91.2 insertion of central venous catheter NEC</td>
<td></td>
</tr>
<tr>
<td>Inpatient Haemodialysis (10 sessions)</td>
<td>Date of each session of haemodialysis should be recorded</td>
<td>Y70.5 Temporary operations</td>
<td></td>
</tr>
</tbody>
</table>

*Note: A diagnosis of CKD is not shown in above, as the patient was NOT diagnosed as having CKD at point of discharge from hospital.*

**Core HRG = FZ08A Complex Large Intestine Procedures with Major CC.**

**In addition, each day in critical care would generate an unbundled HRG which depends on how many organs are supported.**

- XC01Z Adult Critical Care - 6 Organs Supported
- XC02Z Adult Critical Care - 5 Organs Supported
- XC03Z Adult Critical Care - 4 Organs Supported
- XC04Z Adult Critical Care - 3 Organs Supported
- XC05Z Adult Critical Care - 2 Organs Supported
- XC06Z Adult Critical Care - 1 Organs Supported
- XC07Z Adult Critical Care - 0 Organs Supported
Scenario 5

Patient admitted in coma due to overdose, AKI with complications identified – renal function recovers

- A 37 year old is brought into A&E via ambulance in a coma due to a Lithium overdose at home.
- The patient has a history of manic depression. Emergency blood tests reveal a high level of creatinine at 180 with a baseline value of 70, representing AKI stage 2. Serum Lithium level is also elevated.
- The patient is transferred to the renal unit for emergency haemodialysis for systemic Lithium clearance. This is performed via a temporary vascular access catheter on five occasions.
- Renal function recovers fully and the patient is discharged after 14 days.

<table>
<thead>
<tr>
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<th>Specific notes on recording</th>
<th>Examples of ICD-10 and OPCS-4 codes assigned by clinical coder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coma due to deliberate lithium overdose</td>
<td></td>
<td></td>
<td>T56.8 Toxic effect of other metals</td>
</tr>
<tr>
<td>Acute kidney Injury</td>
<td></td>
<td></td>
<td>X69.0 Intentional self-poisoning by and exposure to other and unspecific chemicals and noxious substances, home</td>
</tr>
<tr>
<td>Manic depression</td>
<td></td>
<td></td>
<td>R40.2 Coma, unspecified</td>
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<td></td>
<td></td>
<td></td>
<td>N17.9 Acute renal failure, unspecified.</td>
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<td></td>
<td></td>
<td></td>
<td>F33.9 Recurrent depressive disorder, unspecified</td>
</tr>
<tr>
<td>Procedure/clinical intervention</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temporary non tunnelled vascular catheter</td>
<td></td>
<td></td>
<td>L91.2 insertion of central venous catheter NEC</td>
</tr>
<tr>
<td>Haemodialysis as inpatient (5 sessions)</td>
<td></td>
<td>Date of each session of haemodialysis should be recorded</td>
<td>Y70.5 Temporary operations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>X40.3 Haemodialysis NEC Note: X40.3 is assigned five times here. A code from category X40.- Compensation for renal failure must be assigned every time dialysis is carried out.</td>
</tr>
</tbody>
</table>

Core HRG = WA11V Poisoning, toxic, environmental and unspecified effects with Major CC.
3. Recording and coding of AKI

Examples

Scenario 6

Patient admitted with AKI, develops acute pulmonary oedema and requires period in ITU – patient does not recover kidney function

- A 69 year old patient presents to a district general hospital with malaise, breathlessness and haemoptysis. On admission, blood tests show he has acute kidney injury (stage 3). Urgent ultrasound is normal and urine dipstick reveals heavy blood and protein. The patient is diagnosed with acute glomerulonephritis. A CXR identifies probable pulmonary haemorrhage.

- The patient is urgently transferred to a specialist renal unit at a neighbouring trust for investigation and management. A renal biopsy is performed (percutaneous needle biopsy of lesion of kidney), which reveals crescentic glomerulonephritis. Immunology tests show anti-GBM disease.

- The patient is commenced on haemodialysis and plasma exchange via a femoral temporary vascular catheter initially and then an internal jugular temporary vascular catheter.

- The patient is also treated with intravenous cyclophosphamide as well as high dose steroids. Breathlessness and hypoxia worsens and the patient is admitted for three days to HDU/ITU for CPAP (continuous positive airways pressure) but is not intubated or mechanically ventilated. The patient's respiratory status then improves and the patient returns to the renal ward.

- Ten plasma exchanges are given in total. There is no evidence of recovery of kidney function. A tunnelled venous line is inserted for ongoing dialysis. The patient is discharged after a 28 day admission.

- The patient continues HD three times per week in a satellite unit and continues to attend for fortnightly IV cyclophosphamide and for review in vasculitis clinic. There is no recovery of renal function and dialysis is required long-term.

PROVIDER 1: District General Hospital

<table>
<thead>
<tr>
<th>Recorded by clinician in medical record</th>
<th>Specific notes on recording</th>
<th>Examples of ICD-10 and OPCS-4 codes assigned by clinical coder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis</td>
<td>Specific notes on recording</td>
<td>Examples of ICD-10 and OPCS-4 codes assigned by clinical coder</td>
</tr>
<tr>
<td>Acute kidney injury (acute renal failure)</td>
<td></td>
<td>N17.9 Acute renal failure, unspecified.</td>
</tr>
<tr>
<td>Glomerulonephritis</td>
<td></td>
<td>N05.9 Unspecified nephritic syndrome, unspecified</td>
</tr>
<tr>
<td>Pulmonary haemorrhage</td>
<td></td>
<td>R04.8 Haemorrhage from other sites in respiratory passages</td>
</tr>
</tbody>
</table>

Core HRG = LA07C Acute Kidney Injury without CC

Note: Ultrasounds are not coded as part of an inpatient episode. They are only coded if performed in an outpatient setting or if the patient is admitted solely for ultrasound (OPCS-4 Clinical Coding Instruction Manual (Version 4.0))
### 3. Recording and coding of AKI

#### Examples

**PROVIDER 2: Specialist renal unit**

<table>
<thead>
<tr>
<th>Recorded by clinician in medical record</th>
<th>Specific notes on recording</th>
<th>Examples of ICD-10 and OPCS-4 codes assigned by clinical coder</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute kidney injury</td>
<td></td>
<td>N17.9 Acute renal failure, unspecified.</td>
</tr>
<tr>
<td>Crescentic glomerulonephritis</td>
<td></td>
<td>N05.7 Unspecified nephritic syndrome, diffuse crescentic glomerulonephritis</td>
</tr>
<tr>
<td>Anti GBM disease (Goodpastures syndrome)</td>
<td></td>
<td>M31.0D Hypersensitivity angiitis</td>
</tr>
<tr>
<td>Pulmonary haemorrhage</td>
<td></td>
<td>N08.5A Glomerular disorders in systemic connective tissue disorders. Note: Goodpastures syndrome is classified to code M31.0 Hypersensitivity angiitis only.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R04.8 Haemorrhage from other sites in respiratory passages</td>
</tr>
<tr>
<td><strong>Procedure/clinical intervention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percutaneous needle biopsy of lesion of right kidney under fluoroscopy.</td>
<td>Any treatment provided by renal clinicians during stay in ICU would be logged in patient record</td>
<td>M13.1 Percutaneous needle biopsy of lesion of kidney Y53.4 Approach to organ under fluoroscopic control Z94.2 Right sided operation</td>
</tr>
<tr>
<td>Femoral vascatheter</td>
<td></td>
<td>L91.2 Insertion of central venous catheter NEC Z98.8 Specified vein of lower limb NEC</td>
</tr>
<tr>
<td>Internal jugular vascatheter</td>
<td></td>
<td>L91.2 Insertion of central venous catheter NEC Z39.8 Specified vein NEC</td>
</tr>
<tr>
<td>Plasma exchange * 10 sessions</td>
<td>Number of plasma exchange sessions needs to be recorded</td>
<td>X32.4 Exchange of plasma (10-19) Note: OPCS-4 code assignment is dependent on the number of sessions performed during the episode of care.</td>
</tr>
<tr>
<td>Haemodialysis as inpatient</td>
<td>Date of each session of haemodialysis should be recorded in the patient notes</td>
<td>X40.3 Haemodialysis NEC Note: A code from category X40.- Compensation for renal failure must be assigned every time dialysis is carried out</td>
</tr>
<tr>
<td><strong>Procedure/clinical intervention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transferred to ICU for CPAP</td>
<td>ICU clinicians would add details of treatments to patient notes</td>
<td>E85.2 Non-invasive ventilation NEC</td>
</tr>
<tr>
<td>Tunnelled line</td>
<td></td>
<td>L91.5 Insertion of tunneled venous catheter</td>
</tr>
</tbody>
</table>
3. Recording and coding of AKI

Examples

**Core HRG = LB05B Kidney Intermediate, Endoscopic and Percutaneous Interventions 19 years and over with Intermediate CC.**

In addition each day in critical care would generate an unbundled HRG which depends on how many organs are supported:

- XC01Z Adult Critical Care - 6 Organs Supported
- XC02Z Adult Critical Care - 5 Organs Supported
- XC03Z Adult Critical Care - 4 Organs Supported
- XC04Z Adult Critical Care - 3 Organs Supported
- XC05Z Adult Critical Care - 2 Organs Supported
- XC06Z Adult Critical Care - 1 Organs Supported
- XC07Z Adult Critical Care - 0 Organs Supported

**SATELLITE DIALYSIS UNIT**

<table>
<thead>
<tr>
<th>Procedure/clinical intervention</th>
<th>Recorded by clinician in medical record</th>
<th>Specific notes on recording</th>
<th>Examples of ICD-10 and OPCS-4 codes assigned by clinical coder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemodialysis (3 * per week)</td>
<td>Date of each session of haemodialysis should be recorded</td>
<td>X40.3 Haemodialysis NEC Note: A code from category X40.- Compensation for renal failure must be assigned every time dialysis is carried out.</td>
<td></td>
</tr>
</tbody>
</table>

**HRG generation related to this scenario depends on whether the patient is classed as having CKD or not – if so and the activity is recorded in the renal dataset then each session would generate:**

**Core HRG = LD05A Satellite Haemodialysis/Filtration with access via haemodialysis catheter 19 years and over**

**However, if this patient’s activity was not recorded in the NRD then each session would generate:**

**Core HRG = LA07G Acute Kidney Injury with Intermediate CC without Interventions**

For commissioning purposes, as this person is solely attending for dialysis (regular attender), this activity would be excluded from PbR and be part of local negotiation.
4. Current visibility of AKI within commissioning

As stated within the introduction (section 1) above, 120,000 admissions were identified from 09/10 HES data which included a diagnosis of AKI. Only 21,000 of these were grouped to a healthcare resource group representing AKI. This suggests that commissioners have visibility through the commissioning process of only around 17.5% of AKI activity that is currently recorded.

The above clinical scenarios all include a diagnosis of AKI at some stage during the pathway (and varying levels of treatment). It is apparent however that unless a patient is admitted with AKI without undergoing any significant procedures it is unlikely that the AKI will drive the HRG to the specific AKI HRGs within the Renal subchapter. However, a secondary diagnosis of AKI where the patient has been admitted with or for something else mean that a HRG with a higher level of resource (i.e. with complications or comorbidities (CC) may be generated, as can be seen from the summary below – relating to the above six clinical scenarios.

Summary of HRGs generated as a result of the above AKI scenarios

a) Clinical scenarios where AKI core HRG is generated

Scenario 1
Patient admitted with severe dehydration, AKI identified – patient recovers kidney function
**LA07G Acute Kidney Injury with Intermediate CC without Interventions**

Scenario 6
Patient admitted with AKI to DGH (provider 1)
**Provider 1 (DGH): LA07C Acute Kidney Injury without CC**

b) Clinical scenarios where an AKI HRG is not generated

Scenario 2
Patient develops AKI with complications whilst in hospital – patient recovers kidney function
**HB12A Major Hip Procedures for non Trauma Category 1 with Major CC**
However here the AKI is on the Major complications (CC) list for subchapter HB so contributes towards this activity mapping to a higher resource HRG

Scenario 3 (spell 1)
Patient develops AKI with complications whilst in hospital – patient does not recover kidney function
**QZ01A Aortic or Abdominal Surgery with CC**
However here the AKI is on the CC list for subchapter QZ so contributes towards this activity mapping to a higher resource HRG.

Scenario 4
AKI develops whilst in hospital and requires ITU - patient does not fully recover kidney function but does not require continued dialysis
**FZ08A Complex Large Intestine Procedures with Major CC**
However here the AKI is on the Major CC list for subchapter FZ so contributes towards this activity mapping to a higher resource HRG.
4. Current visibility of AKI within commissioning

Scenario 5
Patient admitted in coma due to overdose, AKI identified – patient recovers kidney function

**WA11V Poisoning, toxic, environmental and unspecified effects with Major CC**

However here the AKI is on the Major CC list for subchapter WA so contributes towards this activity mapping to a higher resource HRG.

Scenario 6
Patient transferred to specialist renal unit from DGH with AKI, develops acute pulmonary oedema and requires period in ITU – patient does not recover kidney function

**Provider 2 (specialist renal unit): LB05B Kidney Intermediate, Endoscopic and Percutaneous Interventions 19 years and over with Intermediate CC**

As AKI is the primary diagnosis in this scenario (original admission to provider 1), it is not considered as a CC.
5. Feedback and recommended actions

This paper highlights the need to improve current recording and clinical coding of all AKI activity, and also raises a question around whether AKI should be more visible within the commissioning process, to allow commissioners to take a more active role in prevention.

NHS Kidney Care recommends the following actions should be taken to address the issues raised in this paper –

Clinicians:

- To ensure all instances of AKI are accurately recorded within patient notes. In order to facilitate accurate clinical coding, it should be documented in the notes whether the clinical diagnosis of AKI is referring to a traumatic injury or acute renal failure.
- To use the AKI resource pack developed by NHS Kidney Care – see appendix 1. It contains a variety of practical information and resources and has been produced to help trusts tackle AKI. The pack aims to assist clinicians, renal managers and service improvement teams in recognising, recording and treating AKI.

Coders:

- To ensure any diagnosis of AKI identified within the patient’s clinical notes is accurately coded.
- To liaise with the responsible consultant as appropriate before code assignment, where it is not clear within the patient's medical record whether the clinical diagnosis of AKI is referring to a traumatic injury or the more historically familiar term of acute renal failure.

Commissioners:

- To work with providers to regularly monitor the volumes of patients with AKI diagnoses, outside the regular commissioning data flow.
- Agree joint actions as appropriate.

Feedback is requested to the key question posed by this paper: should AKI be more visible within the commissioning process? If it were, it could allow commissioners to take a more active role in prevention and aid the management of NHS spend in this area more effectively.

Please email your responses to admin@kidneycare.nhs.uk with ‘AKI recording and coding’ in the subject line by 31st December 2012.
Appendix I:
Acute kidney injury resource pack


A resource pack has been developed by NHS Kidney Care to help trusts tackle acute kidney injury (AKI). It contains a variety of practical information and resources and has been produced to help clinicians, renal managers and service improvement teams. An electronic version of the pack can be downloaded via the link above and hard copies can be ordered from admin@kidneycare.nhs.uk. The pack contains:

**Acute kidney Injury – what can you do?**
Summarises practical suggestions for clinical leads, clinicians, commissioners, and managers, to help tackle AKI.

**Acute kidney Injury – A competency framework**
Sets out a framework of competencies for prevention, recognition, and management of AKI, outlining what is expected of teams and individuals to help improve accountability at all levels.

**Acute kidney Injury – clinical audit tools**
This document identifies a series of established markers which can be used to measure the quality of care for acutely unwell patients. It describes the background to the problem and sets out the key points in six common clinical pathways at which the quality of care for AKI can be monitored. It brings together the existing quality standards for each pathway, identifies indicators which could be considered for monitoring those standards and details the data items which need to be collected to construct these indicators.

**Example Acute kidney Injury protocol and guidelines**
Sets out the AKI care bundle, and outlines referral and transfer policies for patients with AKI.

**Example CQUIN schemes for acute kidney injury**
These example Commissioning for Quality and Innovation (CQUIN) schemes for AKI focus on improving the quality of care for all emergency admissions.

**Acute kidney Injury Health Service Journal Supplement (June 2011)**
This supplement highlights the extent of the problem of AKI and the quality, safety and resource implications of failing to prevent and promptly treat the condition. It sets out clear actions that can be undertaken to improve care for acutely unwell patients and offers examples and case studies of what works well.

**Acute kidney Injury capacity survey (March 2011)**
Carried out on World Kidney Day 2011, this survey looks at the availability of renal and critical care beds. It highlights the challenges faced in managing AKI, including high levels of bed occupancy and significant numbers of patients awaiting transfer for specialist management.

**How-to guide: network approach improves patient care and reduces the impact of acute kidney injury**
Acute, critical care and renal specialists across five trusts in North Central London are working together to develop and implement new policies and pathways that will tackle the impact of AKI, delivering better quality care and outcomes for patients and better use of NHS resources.
Appendix I: Acute kidney injury resource pack

Guide to resources
Contains links to organisations that provide information about AKI and acute care in general, for healthcare professionals and for patients.

How-to guide: E-alerts ensure timely response to acute kidney injury
An automated real-time alert system at Nottingham University Hospitals NHS Trust helps to ensure that cases of acute kidney injury are identified early and appropriately managed.

How-to guide: AKI one page tool
A simple single-page clinical tool is helping medical staff in Greater Glasgow and Clyde to better prevent, detect and manage AKI.
Appendix II:
Additional sources of information

Relevant NHS Kidney Care publications
A guide to recording and coding in renal units published in June 2011
- www.kidneycare.nhs.uk/_Resourcetodownload-Reports.aspx

London Acute Kidney Injury Network
The London Acute Kidney Injury Network is a collaboration of healthcare professionals and organisations based in and around the capital. A variety of resources are available to download from their website.
- http://www.londonaki.net/

Clinical coding standards and guidance
The NHS Classifications Service within Data Standards and Products Directorate, part of the Technology Office, is the definitive source of clinical coding standards and guidance for clinical classifications ICD-10 and OPCS-4:
- www.connectingforhealth.nhs.uk/systemsandservices/data/clinicalcoding

The Casemix Service, NHS Information Centre for Health and Social Care
The Casemix Service designs and refines classifications that are used by the English NHS to describe healthcare activity. These classifications underpin PbR from costing through to payment, and support local commissioning and performance management:
- www.ic.nhs.uk/services/the-casemix-service

UK Renal Registry
A resource for the development of patient care in renal disease.
- www.renalreg.com