

ACUTE KIDNEY INJURY AUDIT

National Confidential Enquiry into Patient Outcome and Death (NCEPOD)
Data Collection Tool

Hospital number

A. PATIENT AND ADMISSION DETAILS

1. Age Weight kg
☐ Not recorded
2. Gender ☐ Male ☐ Female
3. a. Time of admission (24hr clock) : Date / /
h h m m d d m m y y y y
☐ Not recorded Day of week (MON, TUE, etc)

Was the admission: ☐ A planned admission ☐ Inter-hospital transfer
☐ An emergency admission ☐ Unknown

- b. Time of first medical assessment (24hr clock) : Date / /
h h m m d d m m y y y y
☐ Not recorded Day of week (MON, TUE, etc)

4. a. Grade of above doctor: ☐ FY1 ☐ Staff grade
☐ FY2 ☐ Consultant
☐ SHO/ST1-2 ☐ Other
☐ FTSTA ☐ Not documented
☐ SpR/ST3 or higher

- b. Specialty of admitting doctor:

- c. Type of ward patient first admitted to: ☐ a Renal ward ☐ Level 2 care
☐ Level 3 care ☐ Level 1 care

5. a. Time of Death (24hr clock) : Date of death / /
h h m m d d m m y y y y
☐ Not recorded length of hospital episode Days

- b. Specialty of doctor at time of death:



2 099230 310629



B. RECOGNITION AND ASSESSMENT OF AKI

6. a. What were the patient's most recent U+Es and eGFR in the 6 months prior to admission (if available)?

Na mmol/L ☐ unknown

K mmol/L

Urea mmol/L

Creatinine umol/L

eGFR ml/min ☐ unknown

- b. What was the date of the U+E measurements above?

7. a. What were the patient's first U+Es and eGFR during this admission?

Na mmol/L ☐ unknown

K mmol/L

Urea mmol/L

Creatinine umol/L

eGFR ml/min ☐ unknown

- b. Time and date of measurements (24hr clock)

:
h h m m

Date / /
d d m m y y y y

- c. Were the above U+E measurements part of the initial assessment?

☐ Yes ☐ No

8. a. Did the patient have evidence of kidney disease on admission?

☐ Yes ☐ No

- b. If yes was this ☐ *A new diagnosis of AKI

☐ *Chronic *CKD stage ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

☐ *Acute on Chronic *stage of pre-existing CKD ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5

* See definitions at back of questionnaire

- c. If indicated above, what was the aetiology of the the CKD?

9. If the patient had no evidence of kidney disease on admission or the patient presented with chronic kidney failure, was there any documented consideration that the patient was at risk of AKI?

☐ Yes ☐ No





10. a. In the initial assessment at admission, which of the following risk factors were assessed and recorded in the patient's casenotes?

- | | |
|---------------------------------------|---|
| <input type="checkbox"/> Age | <input type="checkbox"/> Sepsis |
| <input type="checkbox"/> Co-morbidity | <input type="checkbox"/> Biochemistry |
| <input type="checkbox"/> Medication | <input type="checkbox"/> Urinalysis |
| <input type="checkbox"/> Previous CKD | <input type="checkbox"/> Weight |
| <input type="checkbox"/> Hypovolaemia | <input type="checkbox"/> Nutritional state |
| <input type="checkbox"/> Hypotension | <input type="checkbox"/> Other <input type="text"/> |

b. In your opinion was this adequate for this patient?

☐ Yes ☐ No

11. If No which of the following risk factors were not adequately assessed for this patient

- | | |
|---------------------------------------|---|
| <input type="checkbox"/> Age | <input type="checkbox"/> Sepsis |
| <input type="checkbox"/> Co-morbidity | <input type="checkbox"/> Biochemistry |
| <input type="checkbox"/> Medication | <input type="checkbox"/> Urinalysis |
| <input type="checkbox"/> Previous CKD | <input type="checkbox"/> Weight |
| <input type="checkbox"/> Hypovolaemia | <input type="checkbox"/> Nutritional state |
| <input type="checkbox"/> Hypotension | <input type="checkbox"/> Other <input type="text"/> |

12. a. Was there a delay in recognising the AKI?

☐ Yes ☐ No

b. If Yes how long was the delay?

days hours

c. Was the delay due to (answers may be multiple)?

- ☐ Inadequate observations
☐ Lack of clinician experience
☐ Inadequate investigations
☐ Lack of clinical reviews
☐ Other

13. What *stage AKI was the patient in when it was recognised?

Stage ☐ 1 ☐ 2 ☐ 3

* See definitions at back of data collection tool





D. POST-ADMISSION AKI

14. a. Was the AKI that developed post admission ☐ Predictable or ☐ Unpredictable
☐ Avoidable or ☐ Unavoidable

b. Please explain your answers:

15. a. What were the patients U+Es at the time AKI was recognised? Na mmol/L ☐ unknown

K mmol/L

Urea mmol/L

Creatinine umol/L

- b. What was the date and time of the U+E measurements above?

/ /
d d m m y y

Time (please use 24-hr clock)?

h h m m

16. a. In your opinion could AKI that developed post admission have been due to a delay in a required surgical procedure? ☐ Yes ☐ No

- b. If yes please expand on your answer

17. a. Did the patient develop AKI in the postoperative period? ☐ Yes ☐ No

- b. If yes what procedure was performed?

- c. If yes what grade was the surgeon?

- d. If yes how long post-op?

days hours

- e. In your opinion was this directly related to: ☐ Poor pre-operative management ☐ Poor post-operative management
(answers may be multiple) ☐ Poor surgical technique ☐ Other
☐ Complications of surgery ☐ Unknown
☐ Timeliness of surgery

- f. please expand on your answer



E. ASSESSMENT & MANAGEMENT OF AKI

18. In the assessment of the patient with AKI, which of the following modalities were employed

- ☐ Fluid balance
- ☐ Urinalysis
- ☐ USS
- ☐ CT
- ☐ MRI
- ☐ TPR chart
- ☐ Biochemistry

- ☐ Radioisotopes
- ☐ Sepsis recognition
- ☐ Acid base balance
- ☐ Renal biopsy
- ☐ Immunology
- ☐ Early warning score
- ☐ Other

19. a. Was investigation of the patient's AKI adequate?

☐ Yes ☐ No

b. If No what was omitted?

- ☐ Hydration status
- ☐ Urinalysis
- ☐ USS
- ☐ CT
- ☐ MRI
- ☐ TPR chart
- ☐ Biochemistry

- ☐ Radioisotopes
- ☐ Sepsis recognition
- ☐ Acid base balance
- ☐ Renal biopsy
- ☐ Immunology
- ☐ Early warning score
- ☐ Other

20. Please indicate which of the following were done to manage the patient's AKI (answers may be multiple)

- ☐ TPR chart
- ☐ Fluid balance chart
- ☐ Catheter
- ☐ Hourly urine output measurements
- ☐ CVP
- ☐ Correction of hypovolaemia
- ☐ Adequate monitoring of biochemistry
- ☐ Cessation of nephrotoxic drugs (excluding diuretics)

- ☐ Administration of diuretics
- ☐ Cessation of diuretics
- ☐ Medications altered to 'renal doses'
- ☐ Review by renal dietitian or nutrition team
- ☐ Daily weight chart
- ☐ Interventional radiology
- ☐ Surgery
- ☐ Antibiotics
- ☐ Other

21. a. Was the above adequate for this patient?

☐ Yes ☐ No

b. If No; what was omitted?

- ☐ TPR chart
- ☐ Fluid balance chart
- ☐ Catheter
- ☐ Hourly urine output measurements
- ☐ CVP
- ☐ Correction of hypovolaemia
- ☐ Adequate monitoring of biochemistry
- ☐ Cessation of nephrotoxic drugs (excluding diuretics)

- ☐ Administration of diuretics
- ☐ Cessation of diuretics
- ☐ Medications altered to 'renal doses'
- ☐ Review by renal dietitian or nutrition team
- ☐ Daily weight chart
- ☐ Interventional radiology
- ☐ Surgery
- ☐ Antibiotics
- ☐ Other



c. Were inappropriate/non-proven drugs used?

☐ Yes

☐ No

If yes please expand?

F. REFFERAL & SUPPORT

22. a. Was the patient referred to a nephrologist?

☐ Yes

☐ No (go to Q24)

b. If yes how long after the patient developed AKI?

days

hours

c. Was the nephrologist based:

☐ onsite

☐ offsite

d. Grade of most senior nephrologist:

e. What was the outcome of the referral (answers may be multiple)?

☐ Telephone advice

☐ Transfer to HDU/ITU

☐ Ward review

☐ Transfer to renal unit

f. Was there documented evidence of difficulty getting nephrology advice?

☐ Yes

☐ No

23. a. In your opinion was the referral timely?

☐ Yes

☐ No

b. If No please expand on your answer:

c. Was the level of advice given appropriate?

☐ Yes

☐ No

d. If No please expand on your answer:

e. Was the frequency of communication with the renal team appropriate?

☐ Yes

☐ No

24. a. If the patient was not referred to a nephrologist, should they have been?

☐ Yes

☐ No

b. If Yes - why?

☐ Clinical opinion

☐ Renal Replacement Therapy (RRT)

☐ Advanced management of AKI (without RRT)

☐ Other

25. a. Was the patient transferred to a new ward for management of their AKI?

☐ Yes

☐ No

b. If Yes was this to:

☐ a Renal unit

☐ Level 3 care

☐ Level 2 care

☐ Level 1 care

☐ other





26. a. If transferred to level 2/3 care was there documented input from a renal team post transfer?

☐ Yes ☐ No

b. If Yes was this adequate?

☐ Yes ☐ No

c. If No please expand on your answer:

27. a. If the patient was not transferred to a renal unit or level 2/3 ward, should they have been?

☐ Yes ☐ No ☐ Not applicable

b. If yes would this be for:

☐ More acute care

☐ RRT

☐ Cardio-respiratory support

☐ Other

28. a. Did the patient receive adequate senior reviews?

☐ Yes ☐ No

b. When was the patient first reviewed by a consultant?

☐ on admission

☐ within 12 hours of admission

☐ > 12 hours but < 24hours

☐ > 24 hours

☐ not reviewed by consultant

29. a. Was outreach involved with the care of the patient?

☐ Yes ☐ No

b. If No do you think the patient would have benefited from outreach input?

☐ Yes ☐ No

30. a. Did the patient receive RRT?

☐ Yes ☐ No

b. If yes what type of RRT?

☐ Intermittent

☐ Continuous

☐ Peritoneal dialysis

c. Was RRT (or the type) appropriate for this patient?

☐ Yes ☐ No

d. If RRT (or the type) was not appropriate, why not?

☐ Yes but type not appropriate

e. If the patient did NOT receive RRT should they have?

☐ Yes ☐ No

f. If Yes please expand on your answer:





G. COMPLICATIONS OF AKI

31. Which complications of AKI did the patient develop?

(answers may be multiple)

☐

Hyperkalaemia

☐

Haemorrhage

☐

Acidosis

☐

Serositis

☐

Oedema

☐

Encephalopathy

☐

Sepsis

☐

Other

☐

Resp failure

32. a. Were all the complications indicated above recognised?

☐

Yes

☐

No

b. If No which were missed?

(answers may be multiple)

☐

Hyperkalaemia

☐

Haemorrhage

☐

Acidosis

☐

Serositis

☐

Oedema

☐

Encephalopathy

☐

Sepsis

☐

Other

☐

Resp failure

33. a. Were all the complications of AKI managed appropriately?

☐

Yes

☐

No

b. If No please expand on your answer:

☐

ID

34. a. Were any of the complications avoidable?

☐

Yes

☐

No

If Yes please expand on your answer:



DEFINITIONS

Mode of presentation	Inclusion criteria
Acute renal failure	Presented unexpectedly with normal sized kidneys, or presented after known renal insult, previous renal function normal, or presented after known renal insult, previous function unknown but normal size kidneys
Acute-on-chronic	Presented either unexpectedly or after a known renal insult and known to have had previous serum creatinine > 150 mmol/l, or shown on ultrasound to have at least one small kidney (< 8 cm)
Chronic renal failure	Known to have had chronic renal failure followed by a physician, no obvious renal insult precipitating requirement for dialysis

CKD Stage	Estimated GFR	Urine output criteria
1	90+	Normal kidney function but urine findings or structural abnormalities or genetic trait point to kidney disease
2	60-89	Mildly reduced kidney function and other findings (as stage 1) point to kidney disease
3	30-59	Moderately reduced kidney function
4	15-29	Severely reduced kidney function
5	<15	Very severe or endstage kidney failure (sometimes called established renal failure)

AKI Stage	Serum creatinine criteria	Urine output criteria
1	Increase in serum creatinine of more than or equal to 0.3 mg/dl ($\geq 26.4 \mu\text{mol/l}$) or increase to more than or equal to 150% to 200% (1.5- to 2-fold) from baseline	Less than 0.5 ml/kg per hour for more than 6 hours
2	Increase in serum creatinine to more than 200% to 300% (> 2- to 3-fold) from baseline	Less than 0.5 ml/kg per hour for more than 12 hours
3	Increase in serum creatinine to more than 300% (> 3-fold) from baseline (or serum creatinine of more than or equal to 4.0 mg/dl [$\geq 354 \mu\text{mol/l}$] with an acute increase of at least 0.5 mg/dl [$44 \mu\text{mol/l}$])	Less than 0.3 ml/kg per hour for 24 hours or anuria for 12 hours

NATIONAL SPECIALTY CODES

100 = General Surgery
101 = Urology
103 = Breast Surgery
104 = Colorectal Surgery
105 = Hepatobiliary & Pancreatic Surgery
106 = Upper Gastrointestinal Surgery
107 = Vascular Surgery

110 = Trauma & Orthopaedics
120 = Ear, Nose and Throat (ENT)
130 = Ophthalmology
145 = Maxillo-Facial Surgery
150 = Neurosurgery

160 = Plastic Surgery
161 = Burns Care

170 = Cardiothoracic Surgery
171 = Paediatric Surgery
172 = Cardiac Surgery
173 = Thoracic Surgery
180 = Accident & Emergency

190 = Anaesthetics

192 = Critical or Intensive Care Medicine

300 = General Medicine
301 = Gastroenterology
302 = Endocrinology
306 = Hepatology
307 = Diabetic Medicine
314 = Rehabilitation
320 = Cardiology
321 = Paediatric Cardiology
330 = Dermatology

340 = Thoracic/Respiratory Medicine
360 = Genito-Urinary Medicine
361 = Nephrology
400 = Neurology
401 = Clinical Neuro-Physiology
420 = Paediatrics
421 = Paediatric Neurology
430 = Geriatric Medicine
500 = Obstetrics and Gynaecology

501 = Obstetrics

502 = Gynaecology
810 = Radiology
811 = Interventional Radiology
820 = General Pathology
821 = Blood Transfusion
822 = Chemical Pathology
823 = Haematology