

Initials patient:

Patientnumber: -

# Acute Kidney Injury – Epidemiologic Prospective Investigation (AKI-EPI)

## Case Record Form



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## **A) Inclusion - Exclusion**

### **1) Inclusion**

- Patients  $\geq$  18 year
- Informed Consent according to Local Ethics Committee

### **2) Exclusion**

- Patients on chronic Renal Replacement Therapy (RRT)
- Patients admitted after recent kidney transplant (< 3 months)
- ICU discharge  $\leq$  24H and alive
- Readmission to the ICU during the same hospitalization episode (Consider only the first admission to the ICU)

### **3) Informed Consent** (according to local regulations)

- Explicit oral consent by patient or Legal Authorised Representative
- Written consent by patient or Legal Authorised Representative (+ form)

### **Date**

// (ddmmyyyy)

### **Name and signature investigator:**

.....

Initials patient: Patientnumber: -**B) Patient registration (see apendix )****1. Patient data:**Patient number: -Day of birth : // (ddmmyyyy) Age:  yearAdmission Hospital: // (ddmmyyyy)Admission ICU: // (ddmmyyyy)Admission: Planned   
Not planned Gender: male   
female Intra hospital location before ICU: OR  ER   
Other ward  Other ICU  None Race: Caucasian  Black  Asian   
Hispanic  Other Weight:  kgRepresentative Serum Creatinine:  mg/dL   $\mu\text{mol/L}$ Representative Serum Urea/BUN:  mg/dL   $\mu\text{mol/L}$

Initials patient: Patientnumber: -**2. Comorbidities (for SAPS 3 score) (see appendix)**

Cancer therapy	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>		
Cancer	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>		
Hematologic Cancer	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>		
Chronic heart failure (NYHA IV)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>		
Cirrhosis	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>		
AIDS	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>		
Hypertension	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>		
COPD	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>		
Diabetes mellitus	No	<input type="checkbox"/>	Insulin	<input type="checkbox"/>	Non-insulin	<input type="checkbox"/>
Vasoactive drugs before ICU admission	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>		

Initials patient: Patientnumber: -**3. Reason for ICU admission** **CARDIOVASCULAR**Rhythm disturbances Yes  No Hypovolemic shock Yes  No Septic shock Yes  No Anaphylactic, other shock Yes  No  **HEPATIC**Liver failure Yes  No  **DIGESTIVE**Severe acute pancreatitis Yes  No Acute abdomen, other Yes  No  **NEUROLOGIC**Intracranial mass effect Yes  No Focal neurologic deficit Yes  No Seizures Yes  No 

Coma/Stupor/Agitation/Confusion/

Delirium/Obtunded patient/ Vigilance

Disturbances Yes  No



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## **B) Patient daily data entry**

<b>Date</b>	/ /2009	/ /2009	/ /2009	/ /2009	/ /2009	/ /2009	/ /2009
<b>RRT</b>							
No							
CVVH							
CVVHD							
CVVHDF							
IHD							
PD							
Creatinine							
UO over 6 h*							
UO over 12 h*							
UO over 24 h*							
Anuria over 12H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
UO per day							

RRT = renal replacement therapy, CVVH/HD/HDF=continuous veno venous hemofiltration / hemodialysis / hemodiafiltration, IHD=intermittent hemodialysis, PD=peritoneal dialysis, UO=urine output

\*On the website, you will find the cut off urine output for this patient to fulfill the AKI criteria. You can indicate in a tick box, whether the patient fulfills these.

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## **C) AKI data entry form**

You will be asked to fill out these data by the website when the patient meets AKI criteria.

<b>Diuretic Therapy (24 h preceding AKI diagnosis)</b>	<input type="checkbox"/>
<b>Nephrotoxic Therapy (72 h preceding AKI diagnosis)</b>	
Aminoglycosides	<input type="checkbox"/>
Amphotericin B	<input type="checkbox"/>
Radio-contrast media (iodinated)	<input type="checkbox"/>
Non steroidal anti-inflammatory drugs (NSAID's)	<input type="checkbox"/>
Angiotensin-converting enzyme inhibitors/angiotensin II receptor blockers (ACEI/ARB)	<input type="checkbox"/>
<b>Etiology of AKI</b>	
Drug induced (including radio-contrast)	<input type="checkbox"/>
Sepsis	<input type="checkbox"/>
Hypovolemia	<input type="checkbox"/>
Cardiogenic shock	<input type="checkbox"/>
Hepatorenal syndrome	<input type="checkbox"/>
Obstructive	<input type="checkbox"/>
Other	<input type="checkbox"/>

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<b>SOFA score data (24h preceding AKI diagnosis)</b>			
Serum Creatinine (highest value)			
Urine output (mL/day) (lowest value)			
Platelets (highest value)			
Total Bilirubin (highest value)			
Mechanical Ventilation	No	Invasive	Non Invasive
PaO <sub>2</sub> *			
FiO <sub>2</sub> */**			
Mean Arterial Pressure (lowest value)			
Norepinephrine (µg/kg/min) (highest value)			
Epinephrine (µg/kg/min) (highest value)			
Dopamine (µg/kg/min) (highest value)			
Dobutamine (µg/kg/min) (highest value)			
Vasopressin (µg/kg/min) (highest value)			
Other vasoactive therapy (highest value)			
Glasgow Coma Scale(lowest value)			
Intra-abdominal pressure (highest value)			

\* SOFA scores for the lowest PaO<sub>2</sub>/FiO<sub>2</sub> ratio. Therefore, you should record the PaO<sub>2</sub> and FiO<sub>2</sub> that constituted the lowest PaO<sub>2</sub>/FiO<sub>2</sub> ratio during the preceding 24h.

\*\*For spontaneous breathing patients see Appendix 2

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## D) Patient Discharge Data

	Yes	No
<b>Was there a decision to withhold or withdraw a life sustaining therapy?</b>	<input type="checkbox"/>	<input type="checkbox"/>
Date (ddmmyyyy)		
<b>ICU outcome</b>		
Status: Alive	<input type="checkbox"/>	
ICU discharge date (ddmmyyyy)		
Serum creatinine (enter most recent creatinine prior to ICU discharge)		
Renal Replacement Therapy at time of discharge. (enter the type even if the patient did not receive a treatment on the day of discharge)		
None	<input type="checkbox"/>	
CVVH	<input type="checkbox"/>	
CVVHD	<input type="checkbox"/>	
CVVHDF	<input type="checkbox"/>	
IHD	<input type="checkbox"/>	
PD	<input type="checkbox"/>	
<b>Hospital outcome</b>		
Status: Alive	<input type="checkbox"/>	<input type="checkbox"/>
Hospital discharge date (ddmmyyyy)		

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Serum creatinine (enter most recent creatinine prior to hospital discharge)	
Renal Replacement Therapy at time of discharge. (enter the type even if the patient did not receive a treatment on the day of discharge)	
None	<input type="checkbox"/>
IHD	<input type="checkbox"/>
PD	<input type="checkbox"/>

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## Appendix 1: Definitions for patient registration

### 1. Patient data

**Admission hospital (date):** date of hospital admission. If the patient was admitted to more than one hospital before ICU admission, use the first hospital admission as the time of hospital entry.

**Admission:**

**Planned:** patients whose admission was planned at least 12 hours in advance.

**Not planned:** patients whose admission was unplanned or planned less than 12 hours in advance.

**Intra-hospital location before ICU admission:**

**Ward:** the patient was admitted to the ICU from a regular medical or surgical ward

**Emergency room (ER):** the patient was admitted to the ICU from the emergency room

**Operative Room (OR):** the patient was admitted to the ICU from the operative room.

**Other ICU:** the patient was admitted to the ICU from another ICU, located in the same hospital or in another hospital.

**Representative serum creatinine/serum urea/BUN:** a serum creatinine/urea/BUN concentration obtained within a 3-month period preceding ICU admission, considered representative for the baseline kidney function.

### 2. Comorbidities

**Cancer therapy:** - externally administered radiotherapy in the 6 months prior to admission. Excluding radiotherapy for non-invasive skin tumours, enteral or parenteral radioisotope therapy, radioactive implants, and radiotherapy for prevention of heterotopic bone formation.

- Chemotherapy administered in the 6 months prior to admission

**Cancer:** Any cancer, with or without metastasis

**Hematologic cancer:** lymphoma, acute leukaemia, or multiple myeloma

**Chronic heart failure (NYHA IV):** fatigue, dyspnoea or angina at rest or at minimum level of activity. Functionally, this patient cannot stand alone, walk slowly, or dress without symptoms.

**Cirrhosis:** documented by biopsy or clinical symptoms of portal hypertension (gastric or oesophageal varices demonstrated by surgery, imaging or endoscopy, or the demonstration of retrograde splenic-venous blood flow by ultrasound, history of variceal bleeding or episodes of hepatic failure/encephalopathy/coma.

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**AIDS:** Patient meeting the CDC/WHO definitions for AIDS, such as an HIV-positive patient with clinical complications such as *Pneumocystis carinii* pneumonia, Kaposi's sarcoma, lymphoma, tuberculosis or toxoplasma infection, or CD4 cells, if measured, are usually lower than 200.

**Hypertension:** history of systolic blood pressure equal to or greater than 160 mmHg and/or diastolic blood pressure equal to or greater than 95 mmHg, treated or not treated.

**COPD:** chronic obstructive pulmonary disease due to chronic bronchitis and/or emphysema

**Diabetes Mellitus:** - insulin dependent: patients needing daily injection(s) of insulin before ICU admission.

- Non-insulin dependent: patients with prior diagnosis of diabetes mellitus, controlled with diet and/or drugs. The patient does not need daily injection(s) of insulin before ICU admission.

**Vasoactive drugs before ICU admission:** dopamine equal or greater than 5 microgram/kg/minute or any dose of dobutamine, adrenaline, noradrenaline administered intravenously in continuous perfusion for more than 1 hour prior to ICU admission.

### 3. Reasons for ICU admission

**Rhythm disturbances:** due to heart rate or heart conduction disturbances

**Shock:** Defined by a systolic blood pressure (SBP) less than 90 mmHg or a drop in SBP from baselinewith presence of clinical signs of peripheral circulatory insufficiency (cold, moist, cyanosis) and organ hypoperfusion (oliguria, encephalopathy, metabolic acidosis) or use of inotropic/vasopressor to maintain SBP at a level allowing organ perfusion (adrenaline, noradrenaline, dobutamine at any dose, dopamine >5 µg/kg/min).

- **Hypovolemic shock:** due to haemorrhage or other blood losses, or due to external fluid losses or internal sequestration.

**Liver failure:** hepatic failure inducing metabolic disturbances and/or encephalopathy.

**Acute abdomen:** related to infection, ischemia, perforation, inflammation, either upper or lower gastrointestinal tract. Excludes severe pancreatitis.

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#### 4. Surgical status at admission

**Scheduled surgery:** patients undergoing a surgical procedure before ICU admission which was planned more than 24 hours in advance (including laparoscopic surgery).

**Emergency surgery:** patients undergoing a surgical procedure before ICU admission which was planned less than 24 hours in advance (including laparoscopic surgery).

**No surgery:** patients not undergoing surgery before ICU admission.

#### 5. Anatomical site of surgery

**Trauma: includes surgery on the**

- **Brain:** surgery for subdural, epidural, intracerebral haematoma or skull fracture.
- **Thorax:** surgery for intrathoracic organs (either cardiac, respiratory or digestive tract) and vessels.
- **Abdomen**
- **Limp**
- **Multiple sites**

#### 6. Acute infection at ICU admission

Describes the acquisition of an acute infection, present at ICU admission. Should only be displayed if there is an infection at ICU admission.

Initials patient: Patientnumber: -**Appendix 2: FiO<sub>2</sub> for spontaneous breathing patients.**

100% O <sub>2</sub> Flow rate (L/min)	FiO <sub>2</sub>	100% O <sub>2</sub> Flow rate (L/min)	FiO <sub>2</sub>	100% O <sub>2</sub> Flow rate (L/min)	FiO <sub>2</sub>
<b>Nasal cannula</b>		<b>Oxygen mask</b>		<b>Non-rebreathing mask</b>	
1	0.24	5-6	0.40	6	0.60
2	0.28	6-7	0.50	7	0.70
3	0.32	7-8	0.60	8	0.80
4	0.36			9	0.90
5	0.40			10	0.99
6	0.44				