

Draft Guidelines for Management of Advanced AKI in ICU during COVID-19

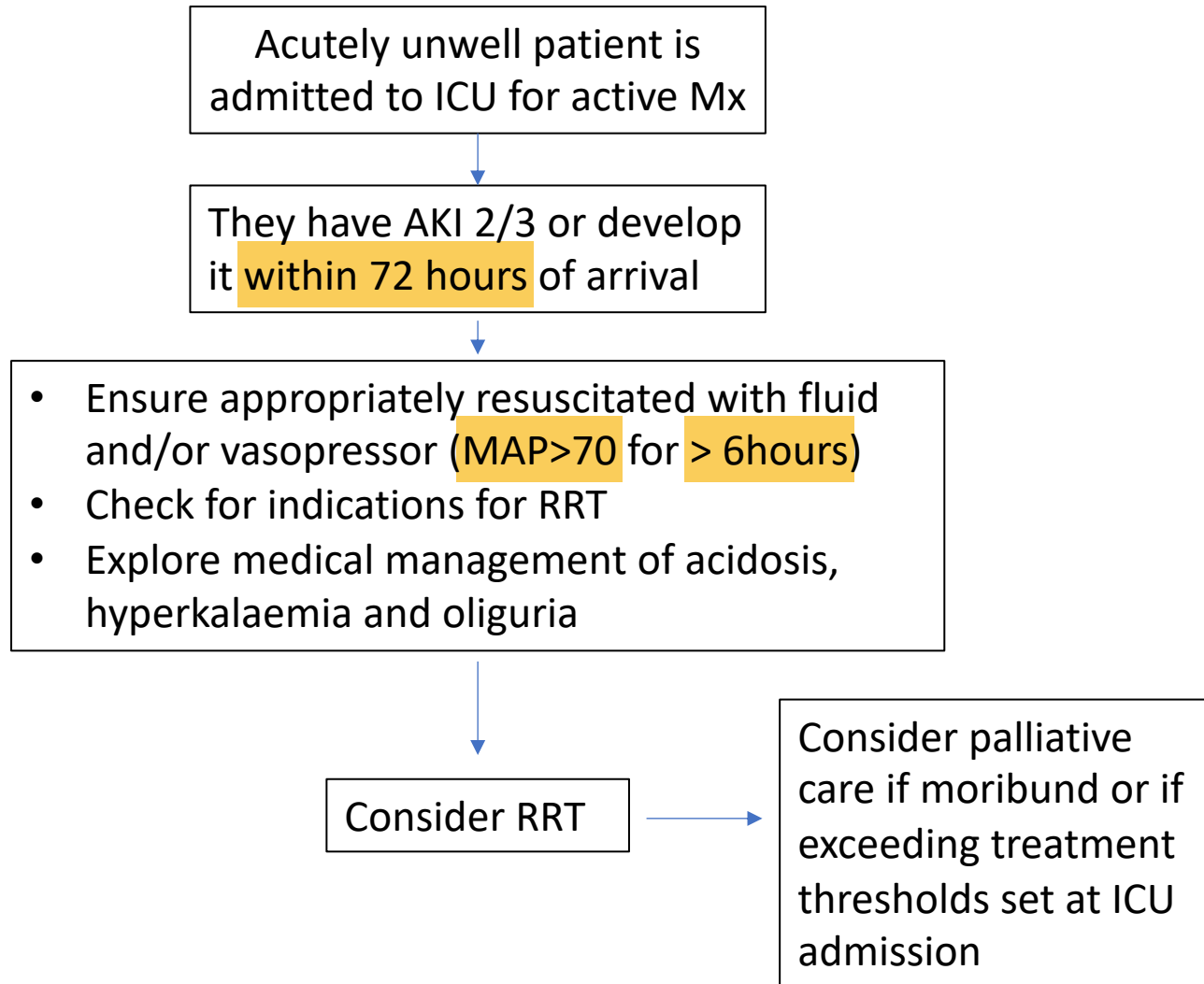
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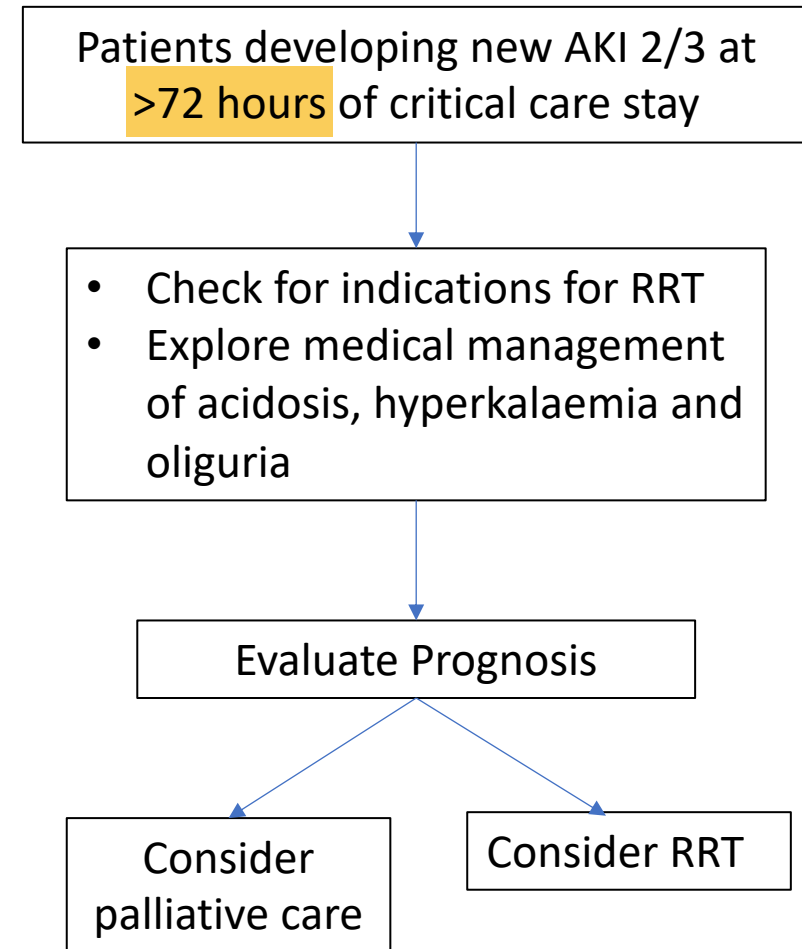
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Decision support tool for critically ill patients with COVID 19 and AKI 2/3

Early AKI



Late AKI



Strong RRT Indications

- **Oliguria** using Stage 3 AKI UO criteria
 - Anuria of $>12h$ or UO $<0.3ml/kg/h$ for $>24h$
 - If desired a dose of Frusemide up to $1.5mg/kg$ can be given to patients with volume overload with a urine output of $<200ml$ over $2h$ indicative of a failed response
 - Urgency of RRT initiation will be driven by other indication below
- **Hyperkalaemia** in the context of context of Stage 2-3 AKI by creatinine or UO criteria
 - $K > 6$ and ECG changes or any $K > 6.5$
 - Try medical management first in absence of AKI stage 2-3
- **Uraemia**
 - Urea $> 36mmol/l$ start non-urgently (commence RRT within 24h)
 - Start RRT promptly if Urea $>45mmol/l$ as at risk of acute uraemic complications (watch for disequilibrium in intermittent RRT)
- **Refractory Volume Overload**
 - Cumulative fluid balance $>10\%$ estimated body weight
and
 - Failed medical management bolus Frusemide up to $1.5mg/kg$ with a urine output of $<200ml$ over 2h
and
 - Evidence of worsening respiratory function or intra-abdominal hypertension ($>20mmHg$)
- **Acidosis** in the context of context of Stage 2-3 AKI by creatinine or UO criteria
 - $pH < 7.15$
and
 - Base Excess < -10 (in the absence of untreated DKA or lactic acidosis)
- Elevated serum creatinine or lactate in isolation are not indications for RRT

Potential poor prognostic indicators for RRT in de-novo AKI or ESRD

- Late AKI (Stage 2/3 AKI developing >72h after ICU admission)
- Age > 60
 - <50% survival at 20 days in un-selected ICU patients requiring RRT for AKI with <30% one-year survival
- AKI in context of severe Multiple-organ failure
 - For example one or more of:
 - Severe ARDS PF ratio <13.3kPa
 - Severe Shock - Noradrenaline equivalent >0.5µg/kg/min to achieve MAP>60mmHg
 - Platelets <20
 - Bilirubin >200
- Refractory Type 2 Respiratory Failure if inappropriate for ECMO
 - PaCO₂ > 10kPa on optimised mechanical ventilation
- Criteria should be re-evaluated at least every 48h while on RRT

RRT Discontinuation

- Absence of persistent strong RRT indications
and

- Unassisted Urine output >500ml/day

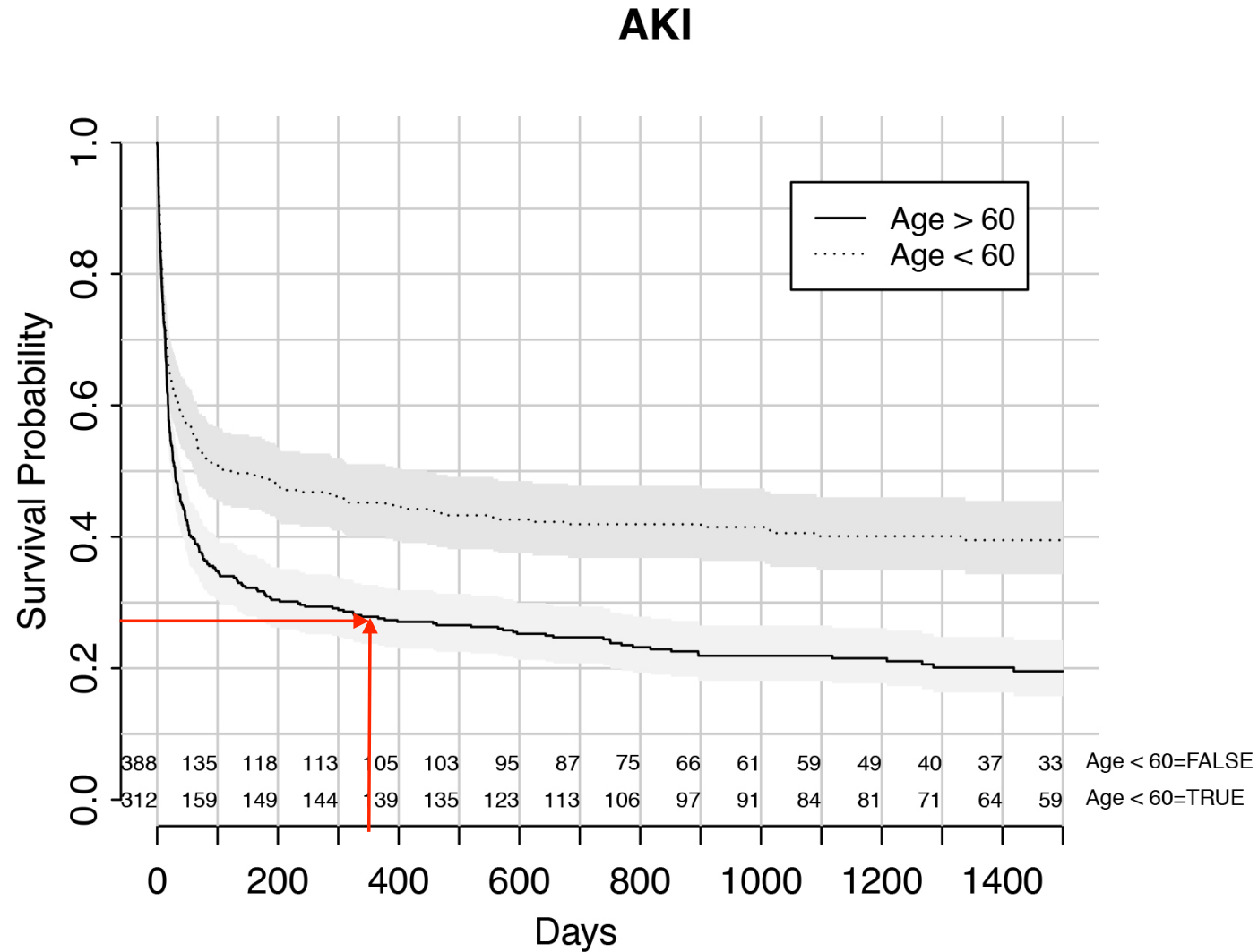
OR

- Transition to Palliative care due to re-evaluation of prognosis

References

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- Chawla, L.S., Davison, D.L., Brasha-Mitchell, E. *et al*. Development and Standardization of a Furosemide Stress Test to Predict the Severity of Acute Kidney Injury. *Crit Care* **17**, R207 (2013)
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Survival after CRRT for AKI – RLH 2011-2016



AKI Diagnostic criteria

	Serum creatinine	Urine output
STAGE 1	1.5–1.9 times baseline in 7d or increase ≥ 0.3 mg/dl ($\geq 26.5 \mu\text{mol/l}$) in 48h	< 0.5 ml/kg/h for 6-12 hours
STAGE 2	2.0–2.9 times baseline	< 0.5 ml/kg/h for ≥ 12 hours
STAGE 3	≥ 3.0 times baseline or creatinine ≥ 4.0 mg/dl or initiation of RRT or in patients < 18 years, eGFR < 35 ml/min/1.73m ²	< 0.3 ml/kg/h for ≥ 24 hrs or anuria for ≥ 12 hours

Fig. 1 Kidney Disease Improving Global Outcomes (KDIGO) classification. Classification of AKI according to KDIGO criteria, defining three grades of severity of AKI on the basis of either the creatinine or urine output criteria