

# ASSOCIATION OF OLIGURIA WITH 90-DAY MORTALITY IN THE CRITICALLY ILL

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## BACKGROUND

- Combining creatinine and urine output (UO) criteria improves the sensitivity of the AKI definition.
- The urine output criterion of Kidney Diseases: Improving Global Outcome (KDIGO)<sup>1</sup> definition of AKI has not been validated against a fixed mortality endpoint in a multicenter setting.

## OBJECTIVE

To study the association of duration and severity of oliguria with 90-day mortality among general intensive care unit patients.

## METHODS

- Sub-study of the prospective, observational FINNAKI study<sup>2</sup>
- We included 2160 patients from 16 ICUs with ICU stay over 24h and hourly UO recordings
- Logistic regression models for 90-day mortality and categorized duration of consecutive oliguria of three different degrees:
  - a) Urine output <0.5mL/kg/h
  - b) Urine output <0.3mL/kg/h
  - c) Urine output <0.1mL/kg/h
- Each model was adjusted for:
  1. Age
  2. Gender
  3. APACHE II admission diagnosis group
  4. SAPS II score without points given for age and renal components
  5. Renal replacement therapy
  6. Fluid accumulation (%) of baseline weight
  7. Use of diuretics
  8. Use of vasoactive medication

## RESULTS

- 1990 of 2160 patients (92.1%) had UO<0.5mL/kg/h for at least 0.5h.
- 608 (28.1%) produced urine less than 0.5mL/kg/h for at least six consecutive hours.
- Patients who fulfilled both UO and creatinine criteria for AKI had highest 90-day mortality (Figure 1).
- Patients with shorter periods of deep oliguria had higher crude 90-day mortality compared to those with mild oliguria for longer periods (Figure 2).
- The shortest consecutive period of urine output less than 0.5mL/kg/h significantly associated with 90-day mortality was 6 to 12 hours. The finding was significant also when all patients with UO <0.3mL/kg/h for longer than 3 hours were excluded (Table).
- Adjusted odds ratio for 90-day mortality of AKI defined only by creatinine criterion was 1.64; 95% confidence interval from 1.29 to 2.08.

## CONCLUSIONS

- UO less than 0.5mL/kg/h for 6 to 12 consecutive hours and UO less than 0.1mL/kg/h for 3 to 6 consecutive hours were associated with an increased risk for 90-day mortality.
- The urine output criterion for AKI does not seem too liberal.

## ACKNOWLEDGEMENTS

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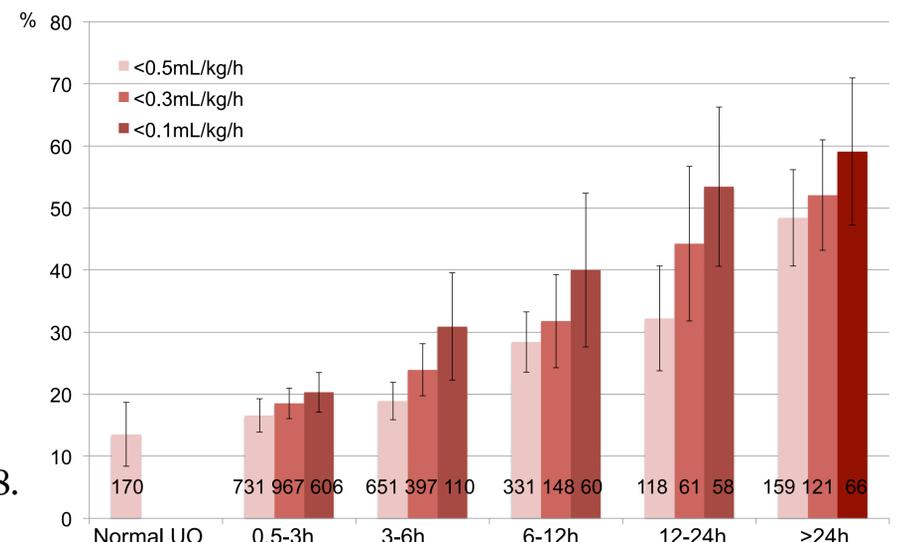
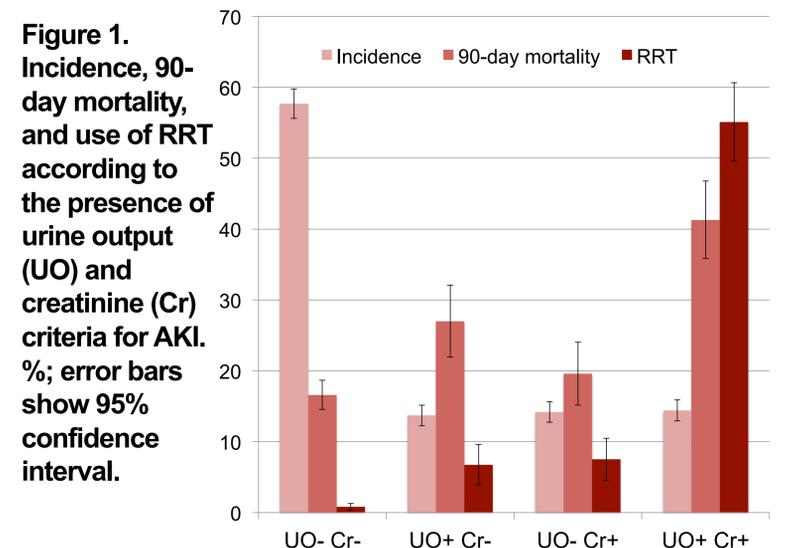


Figure 2. 90-day mortality rate (% with 95% confidence intervals) according to the severity and duration of oliguria.

Urine output mL/kg/h	Shortest period (h)	Odds ratio (95% CI) <sup>a</sup>
UO <0.5	6 to 12	1.72 (1.26-2.35)
UO 0.3-0.5 <sup>b</sup>	6 to 12	1.81 (1.09-3.00)
UO <0.3	6 to 12	2.08 (1.33-3.26)
UO 0.1-0.3 <sup>c</sup>	6 to 12	1.95 (1.09-3.51)
UO <0.1	3 to 6	2.18 (1.31-3.62)

Table. The shortest periods of consecutive oliguria of different severity significantly associated with 90-day mortality after multivariable adjustment.

<sup>a</sup>Results are relative to those without oliguria or duration of oliguria below 3h. <sup>b</sup>727 patients with UO <0.3mL/kg/h longer than 3h excluded <sup>c</sup> 294 patients with UO <0.1mL/kg/h longer than 3h excluded.

## REFERENCES

1. Kidney Disease: Improving Global Outcomes (KDIGO) Acute Kidney Injury Work Group: KDIGO clinical practice guideline for acute kidney injury. *Kidney Int., Suppl* 2012; 2: 1-138.
2. Nisula S et al. Incidence, risk factors and 90-day mortality of patients with acute kidney injury in Finnish intensive care units: the FINNAKI study. *Intensive Care Med* 2013; 39:420-8.