Critical Care Medicine
Content Not for Reuse
XXX 2026 • Volume 54 • Number 00 • Pages XX–XX

EDITORIAL

Rethinking Oliguria in the ICU: From Threshold to Trajectory

KEYWORDS: acute kidney injury; biomarkers; chronic; epidemiology; mortality; oliguria

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OLIGURIA: A SIMPLE SIGNAL WITH A COMPLEX MEANING

Few clinical variables are as routinely measured in the ICU, and as difficult to interpret as urine output. For more than a decade, oliguria below 0.5 mL/kg/hr has been embedded in the Kidney Disease: Improving Global Outcomes (KDIGO) definition of acute kidney injury (AKI) (1, 2). Yet urine output is neither synonymous with glomerular filtration nor necessarily indicative of structural kidney injury. Its relationship with renal function is influenced by hemodynamics, neurohormonal responses, fluid balance, diuretic exposure, and the underlying critical illness.

The conventional 0.5 mL/kg/hr threshold has long been questioned. Its physiologic origins can be traced to early observations of the kidney's maximal concentrating capacity (3), whereas contemporary studies have suggested that more severe oliguria may better identify patients at increased risk of adverse outcomes (4–6). In critically ill patients, Bianchi et al (4) reported that a threshold below approximately 0.2 mL/kg/hr over 3–6 hours identified a population with higher predicted 90-day mortality. These observations raise an important question: should the conventional threshold simply be replaced by another number?

In this issue of *Critical Care Medicine*, the study by Mossberg et al (1) suggests that the answer may be more complex. Rather than searching for a single universal definition of clinically relevant oliguria, their findings invite us to ask a different question: a urine-output threshold for what outcome?

WHAT DOES THE STUDY BY MOSSBERG ET AL ADD?

Mossberg et al (1) analyzed 4999 adult ICU patients without preexisting chronic kidney disease (CKD) and calculated the lowest mean diuresis over 3-, 6-, 12-, and 24-hour intervals throughout the ICU stay. Using generalized additive models adjusted for Simplified Acute Physiology Score (SAPS) 3 estimated mortality and sex, they examined associations with three distinct outcomes: creatinine-defined AKI within 7 days, incident CKD after ICU discharge, and 90-day mortality.

The most interesting observation is not simply that oliguria was associated with all three outcomes. Rather, the urine-output level at which risk increased

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DOI: 10.1097/CCM.0000000000007399

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