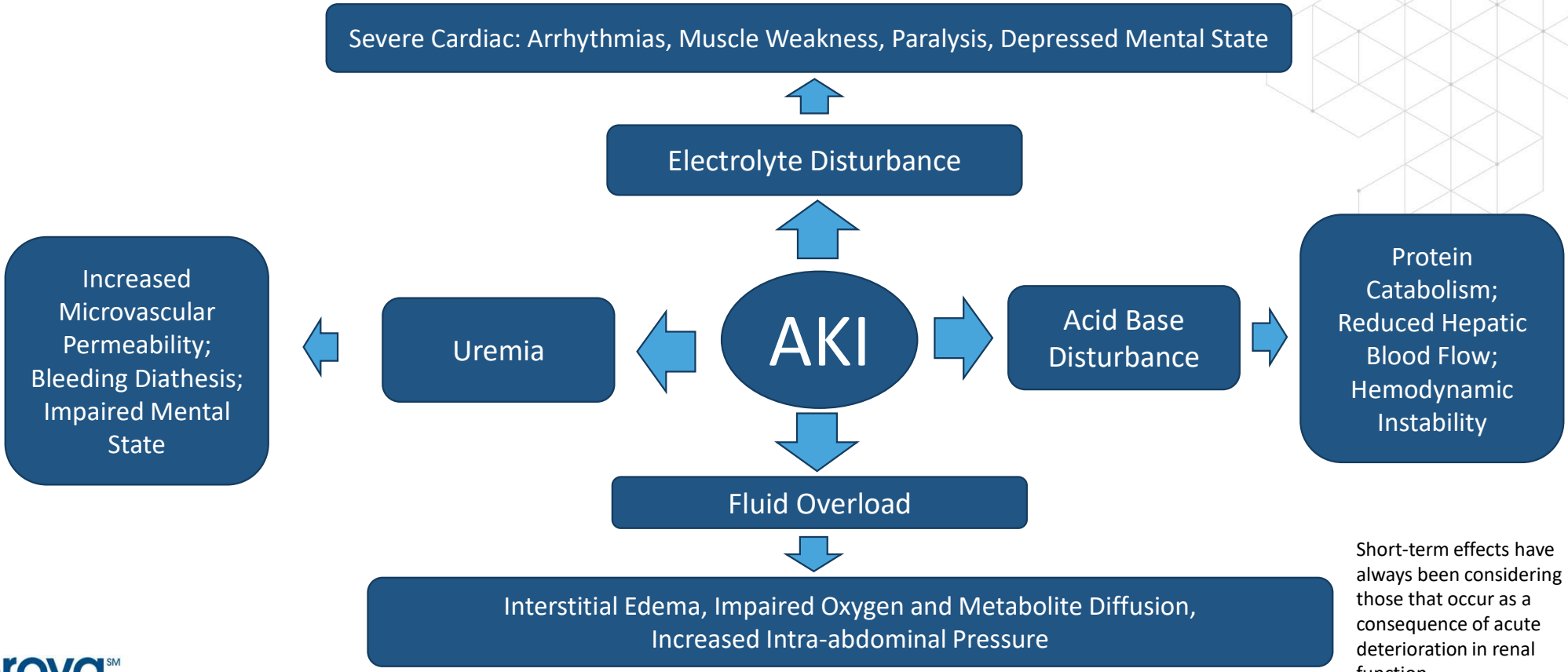
Classical Short-Term Effects of AKI



Short-term effects have always been considering those that occur as a consequence of acute deterioration in renal function.

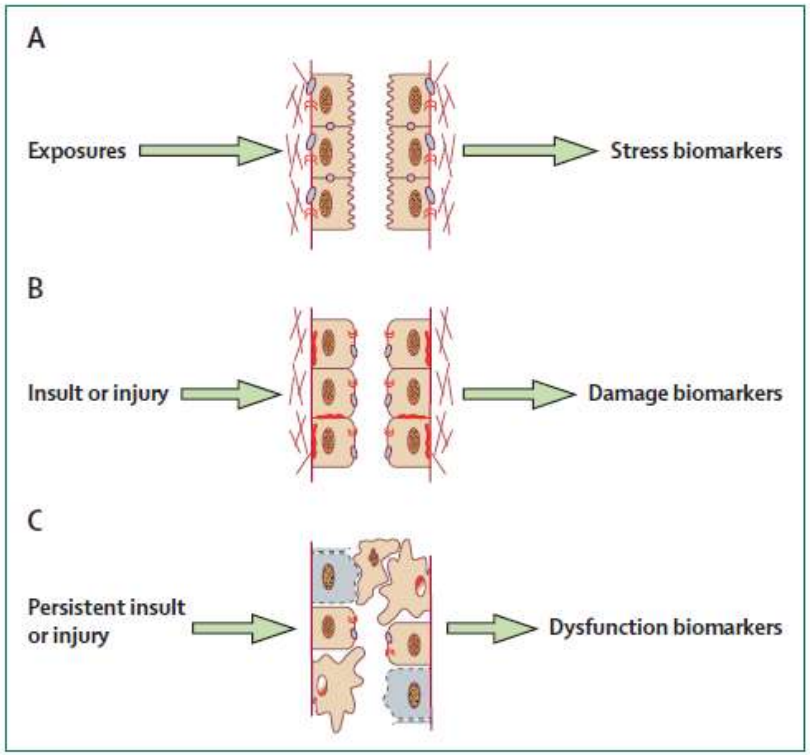
Adapted from Doyle JF, Forni LG. *Critical Care*. 2016.20:188.

Recently Discovered Biomarkers

Biomarker Category	Example
Functional biomarker	Cystatin C, proenkephalin
Urinary low-molecular-weight protein[a]	α_1-microglobulin, β_2-microglobulin, retinol-binding protein, adenosine deaminase-binding protein, cystatin C
Cellular injury/stress-associated protein	Neutrophil gelatinase-associated lipocalin, kidney injury molecule-1, liver-type fatty-acid-binding protein, tissue inhibitor of metalloproteinase 2, and insulin-like-growth-factor–binding protein 7
Urinary tubular enzyme	Proximal renal tubular epithelial antigen, α-glutathione S-transferase, piglutathione S-transferase, γ-glutamyltranspeptidase, alanine aminopeptidase, lactate dehydrogenase, N-acetyl-beta-glucosaminidase, alkaline phosphatase
Inflammatory mediator[b]	Interleukin-18

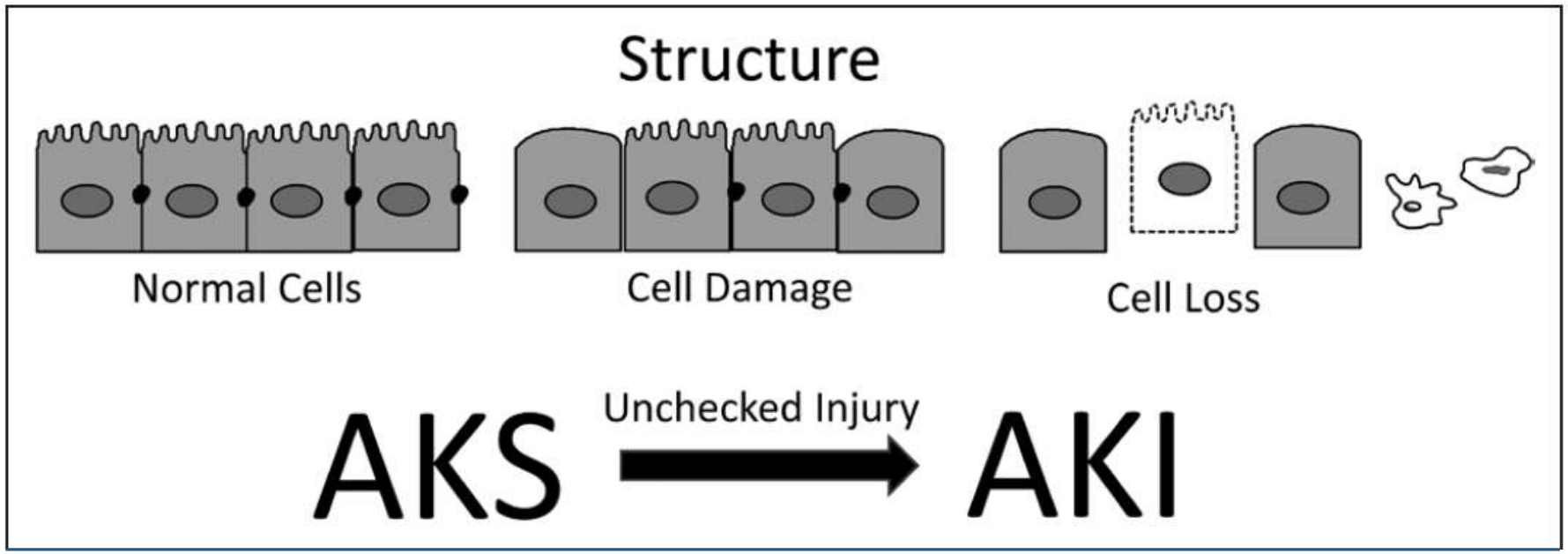
[a]Undergoes glomerular filtration and is reabsorbed without secretion.
[b]Released by renal cells.

Events in the Development of AKI and Relevant Biomarkers



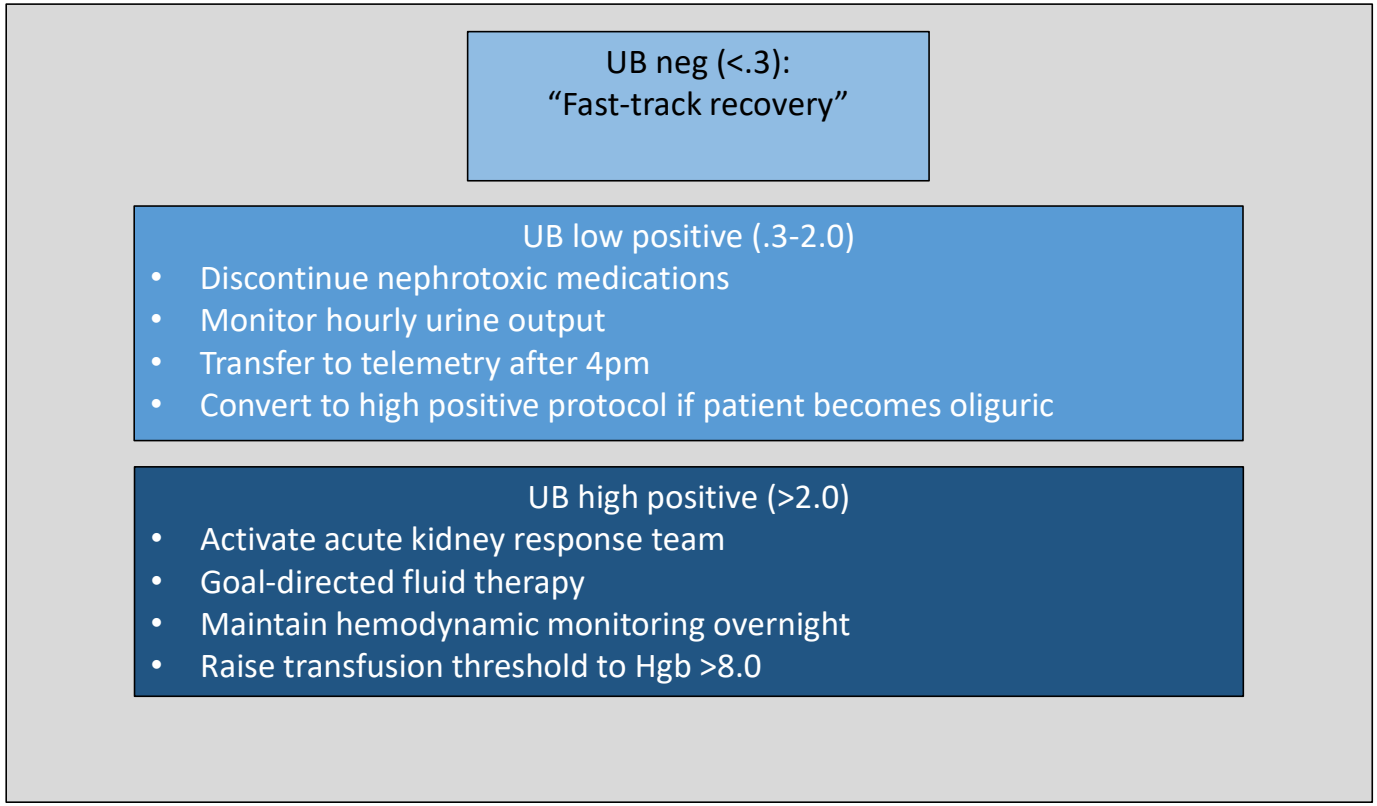
Adapted from Ronco C, Bellomo R, Kellum JA. *Lancet*. 2019;394:1949-1964.

AKS vs. AKI



Adapted from Katz NM, Kellum JA, Ronco C. *Crit Care Med*. 2019;47(7):993-996.

Response to Urinary Biomarker (UB) Drawn the Morning After Cardiac Surgery



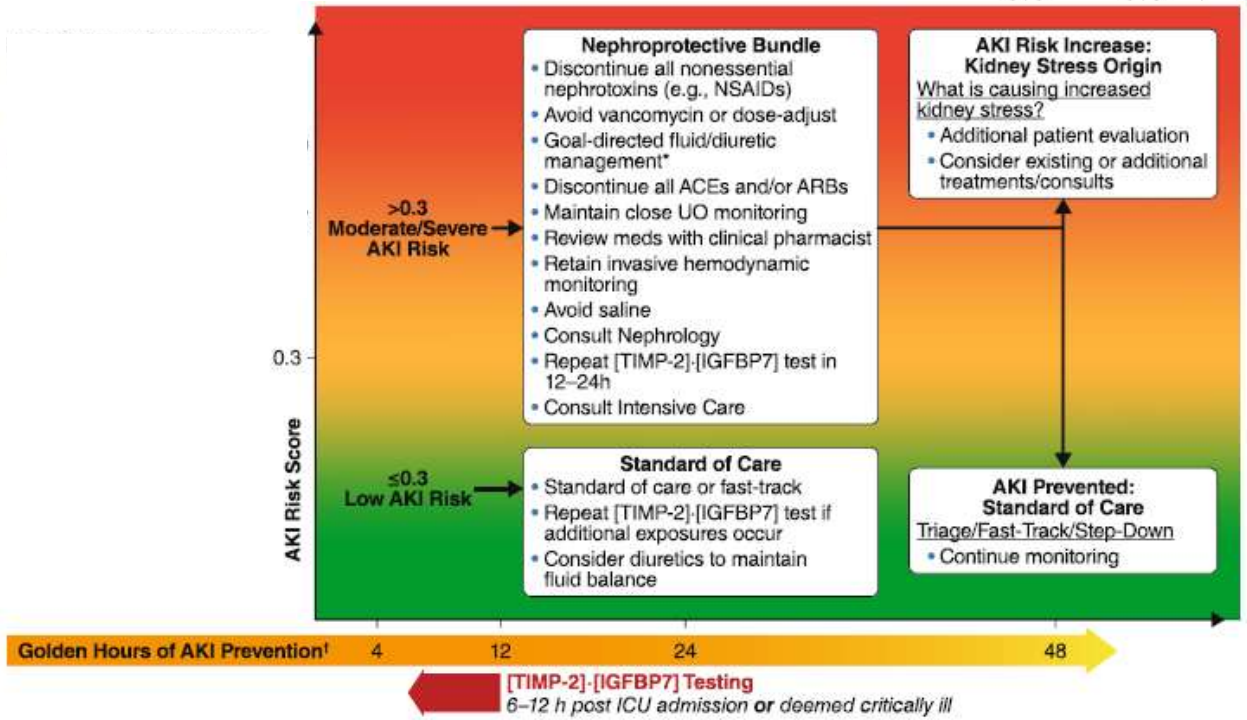
↓ Stage 2/3 AKI reduced 89%

Adapted from Engleman DT, et al. *J Thoracic Cardiovasc Surg. 2019:* https://doi.org/10.1016/j.jtcvs.2019.10.034 https://doi.org/10.1016/j.jtcvs.2019.10.034

[TIMP-2]•[IGFB7] Testing Protocol

Potential AKI Risk Patients

- Cardiovascular/respiratory compromise <24 h (≥21 y)
- Shock
- Sepsis (suspicion+/confirmation)
- Post-operative major/cardiac surgery
- Trauma with cardiac/respiratory compromise
- Other



*Includes bedside ultrasound and functional hemodynamic monitoring.
†Consider additional testing with any significant change in patient condition or insult.

Adapted from Guzzi LM et al. *Critical Care*. 2019:23:225.