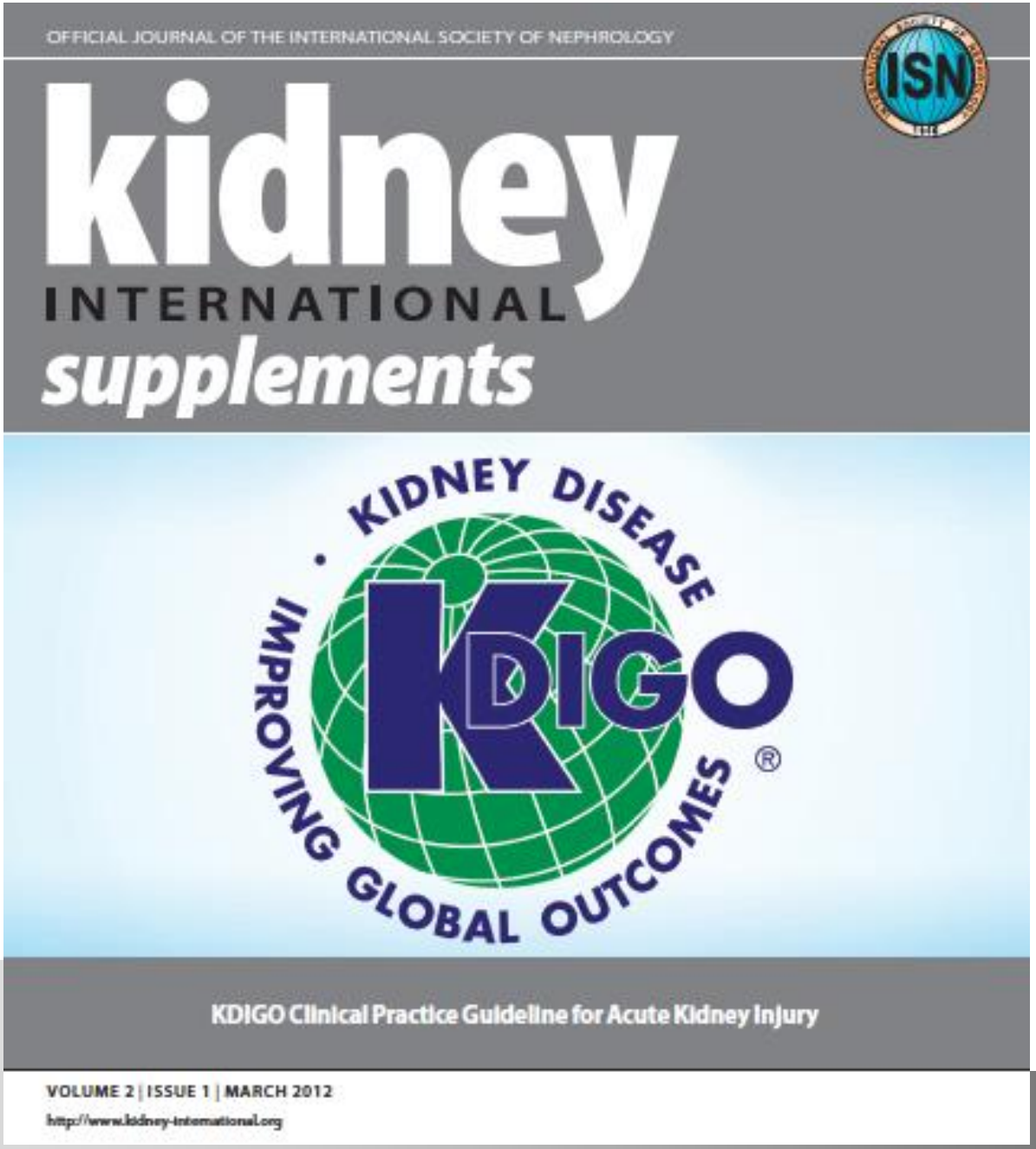
KDIGO Controversies Conference on Acute Kidney Injury

April 25-28, 2019

Rome, Italy



www.kdigo.org

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Rationale for an AKI Guideline

- AKI is prevalent
- AKI is amenable to early detection and potential prevention
- AKI imposes a heavy burden of illness (morbidity and mortality)
- Cost per person of managing AKI is high
- There is considerable clinical practice variability in preventing, diagnosing, treating, and achieving outcomes
- Clinical practice guidelines have the potential to reduce variations, improve outcomes, and reduce costs

Guideline Outline

- AKI Diagnosis, Staging and Risk Assessment
- Prevention and Treatment of AKI
- Contrast-Induced AKI
- Dialysis Interventions for Treatment of AKI

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Group 1: Nomenclature & Diagnostic Criteria

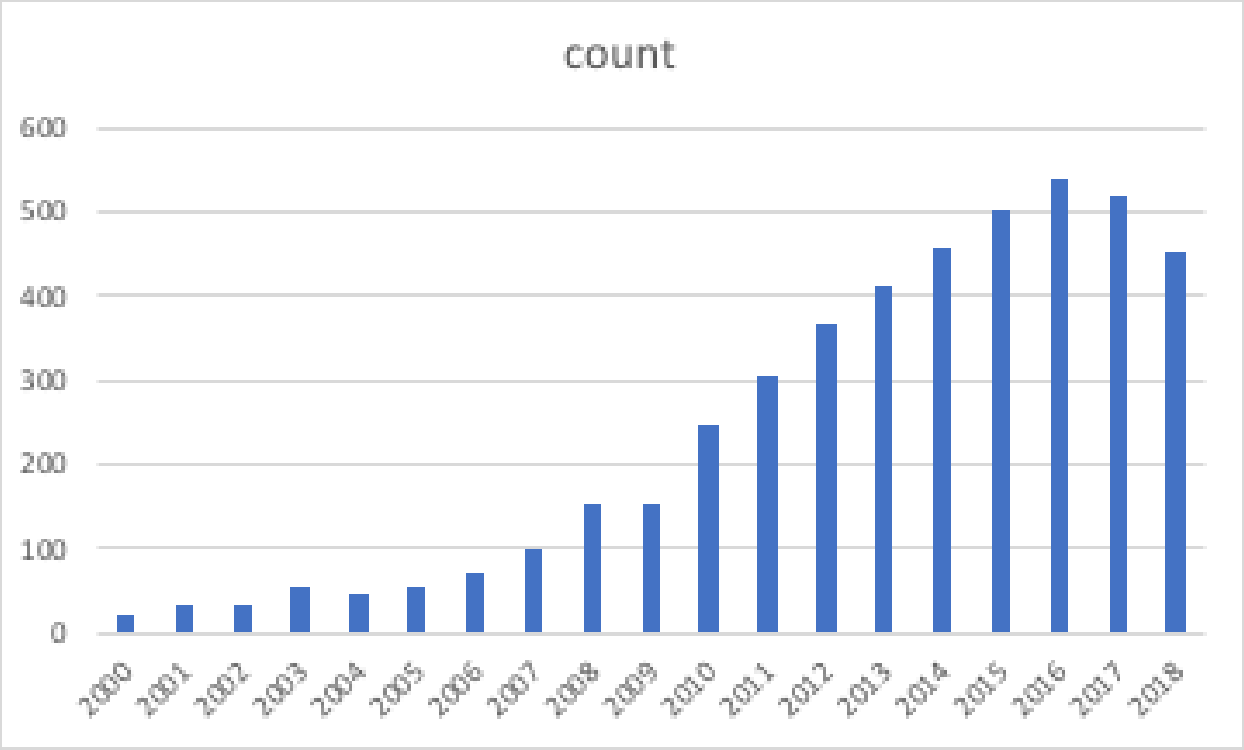
Group 2: AKI Risk Stratification & Assessment

Group 3: Fluid Management & Hemodynamic Support

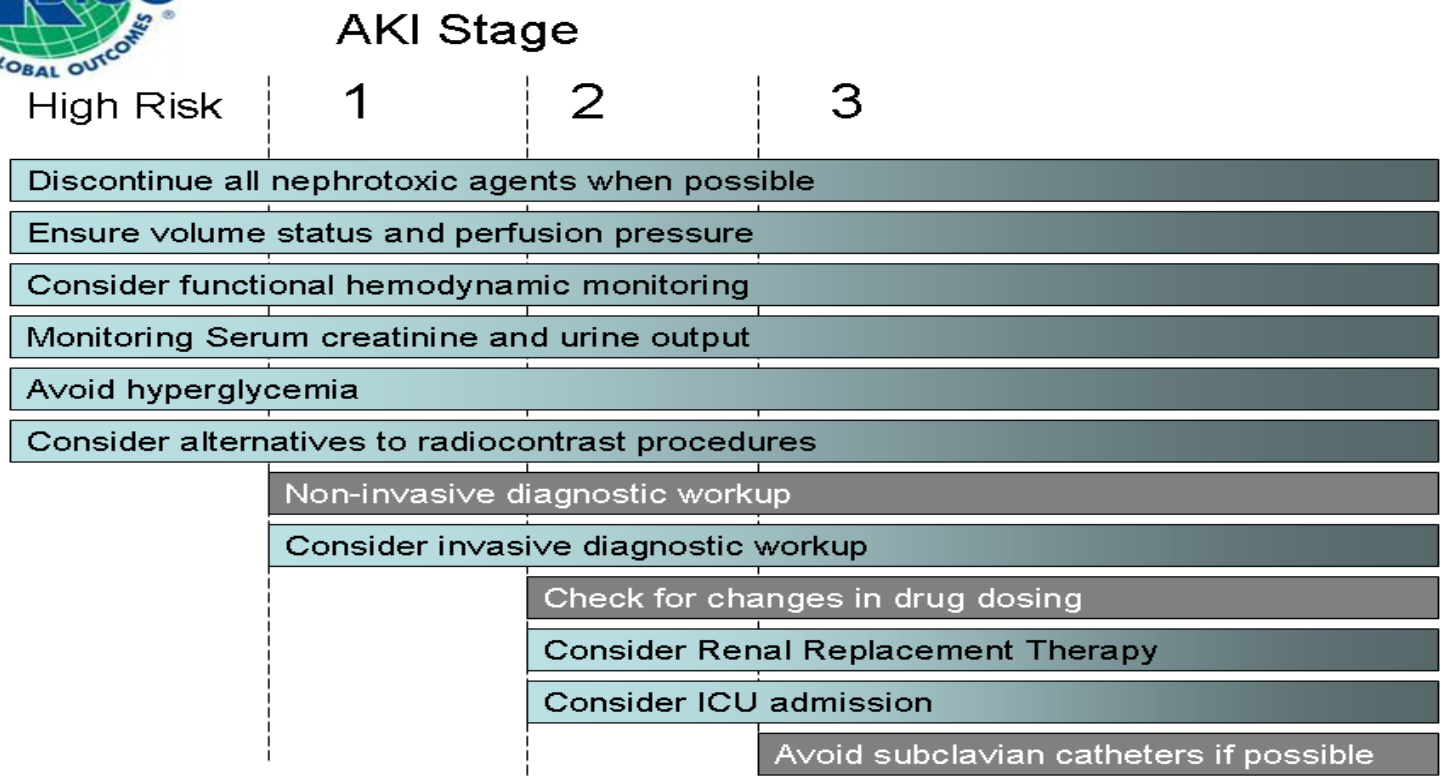
Group 4: Nephrotoxic Agents & Drugs That Affect Kidney Function

Group 5: Renal Replacement Therapy

AKI Biomarker Publications



Stage-Based Management



Stage-based management of AKI: Shading of boxes indicates priority of action—solid shading indicates actions that are equally appropriate at all stages whereas graded shading indicates increasing priority as intensity increases.

Kidney Disease: Improving Global Outcomes

Intensive Care Med
DOI 10.1007/s00134-016-4670-3

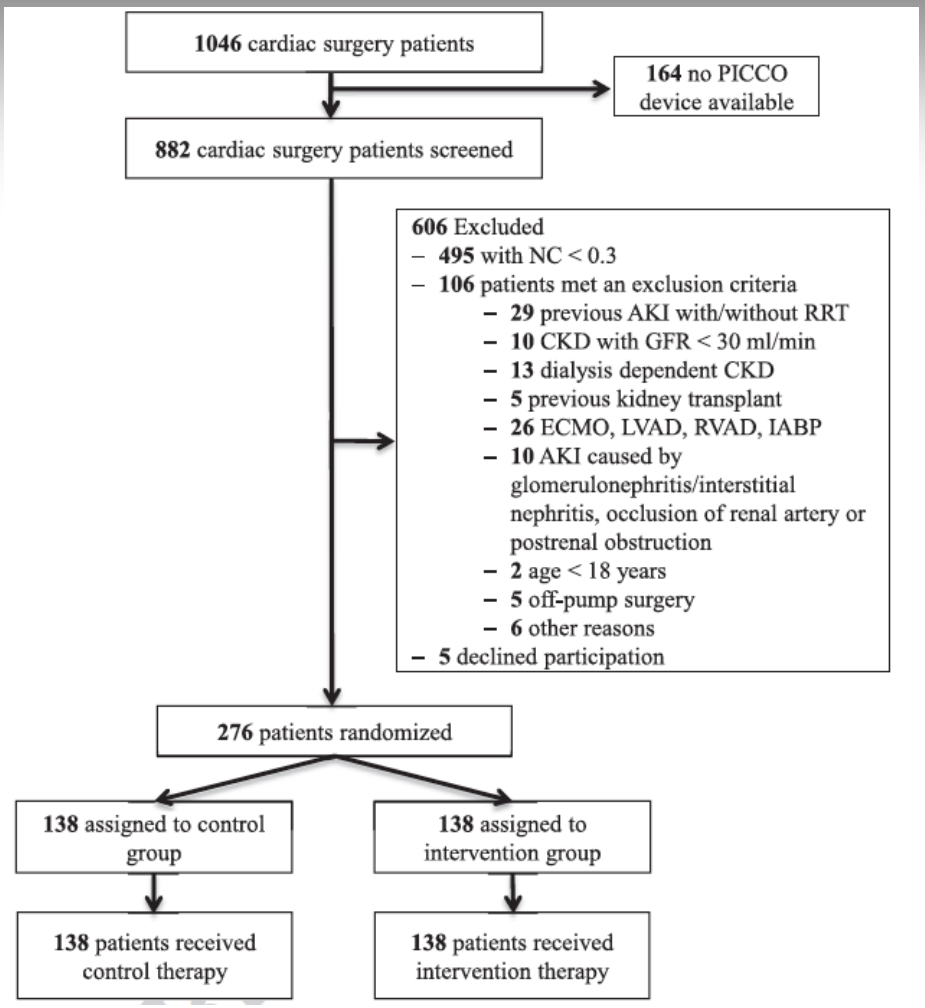
SEVEN-DAY PROFILE PUBLICATION

Prevention of cardiac surgery-associated AKI by implementing the KDIGO guidelines in high risk patients identified by biomarkers: the PrevAKI randomized controlled trial

Melanie Meersch[1], Christoph Schmidt[1], Andreas Hoffmeier[2], Hugo Van Aken[1], Carola Wempe[1], Joachim Gerss[3] and Alexander Zarbock[1*]

Take home message: An implementation of the KDIGO guidelines compared with standard care reduced the frequency and severity of cardiac surgery-associated AKI (CSA-AKI) in high risk patients identified by biomarkers. Future studies will be needed to address whether this approach has an impact on long-term outcomes.

- Avoid nephrotoxins (NSAIDs, ACEi/ARBs)
- Avoid hyperglycemia
- Optimize volume status and hemodynamics



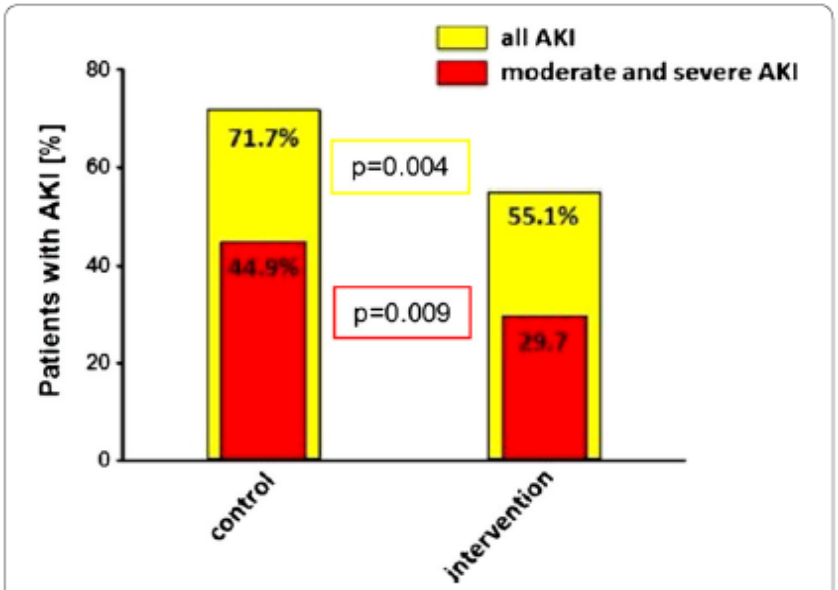


Fig. 2 Occurrence of cardiac surgery-associated AKI. Rate of CSA-AKI in control and intervention groups

Meersch et al. ICM 2017

Kidney Disease: Improving Global Outcomes

Chapter 2.3: Evaluation and general management of patients with and at risk for AKI

2.3.4: Evaluate patients 3 months after AKI for resolution, new onset, or worsening of pre-existing CKD. (*Not Graded*)

- **If patients have CKD, manage these patients as detailed in the KDOQI CKD Guideline (Guidelines 7-15). (*Not Graded*)**
- **If patients do not have CKD, consider them to be at increased risk for CKD and care for them as detailed in the KDOQI CKD Guideline 3 for patients at increased risk for CKD. (*Not Graded*)**

…More Controversy

- Contrast-induced AKI (does it exist?)
- Nephrotoxicity from various drugs (vancomycin, pip-tazo, ACEi, saline)
- RRT
  - Timing!!
  - Net Ultrafiltration Rate

Objectives

- To review the state of the art of selective AKI topics and the relevant literature published since the 2012 KDIGO guideline
- To address the questions related to each topic
- To strive to consensus if possible
- To outline the areas of consensus, persisting controversies, gaps in knowledge and need for research
- To develop a summary publication which will inform the scope of work for the future guideline update

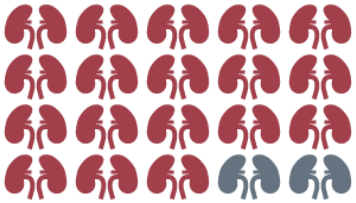
Clinical Decision Support for Acute Kidney Injury and Hospital Survival

METHODS

Outcomes were measured pre- and post-implementation of a Clinical Decision Support System (CDSS) for AKI

Pre-CDSS (12 months):

181k patients
11.0% clinically diagnosed AKI



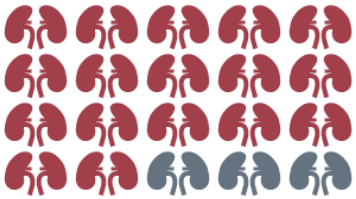
Implemented the CDSS

Clinical Decision Support System

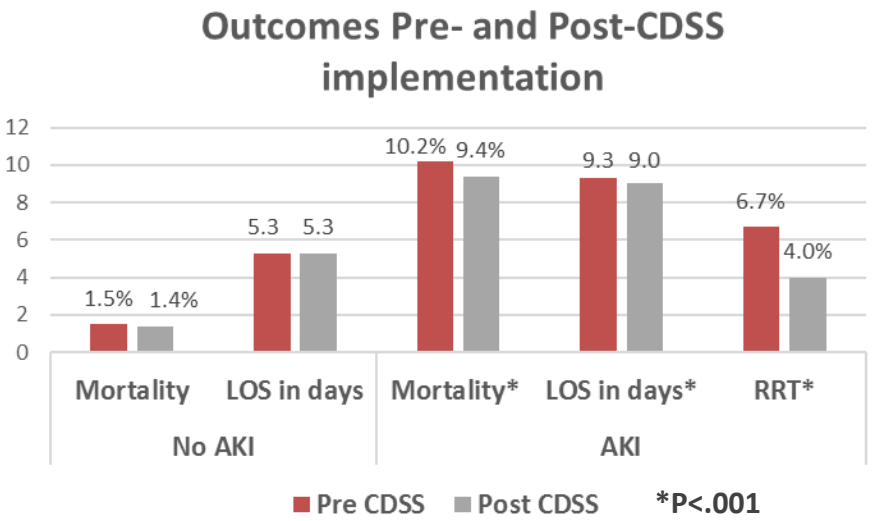
- Derives reference serum creatinine from historical values in EMR
- Flags creatinine changes and KDIGO stage

Post-CDSS (24 months):

346k patients
12.8% clinically diagnosed AKI



OUTCOMES



CONCLUSION

Implementation of a CDSS for AKI resulted in a small but sustained decrease in hospital mortality, length of stay and use of dialysis.

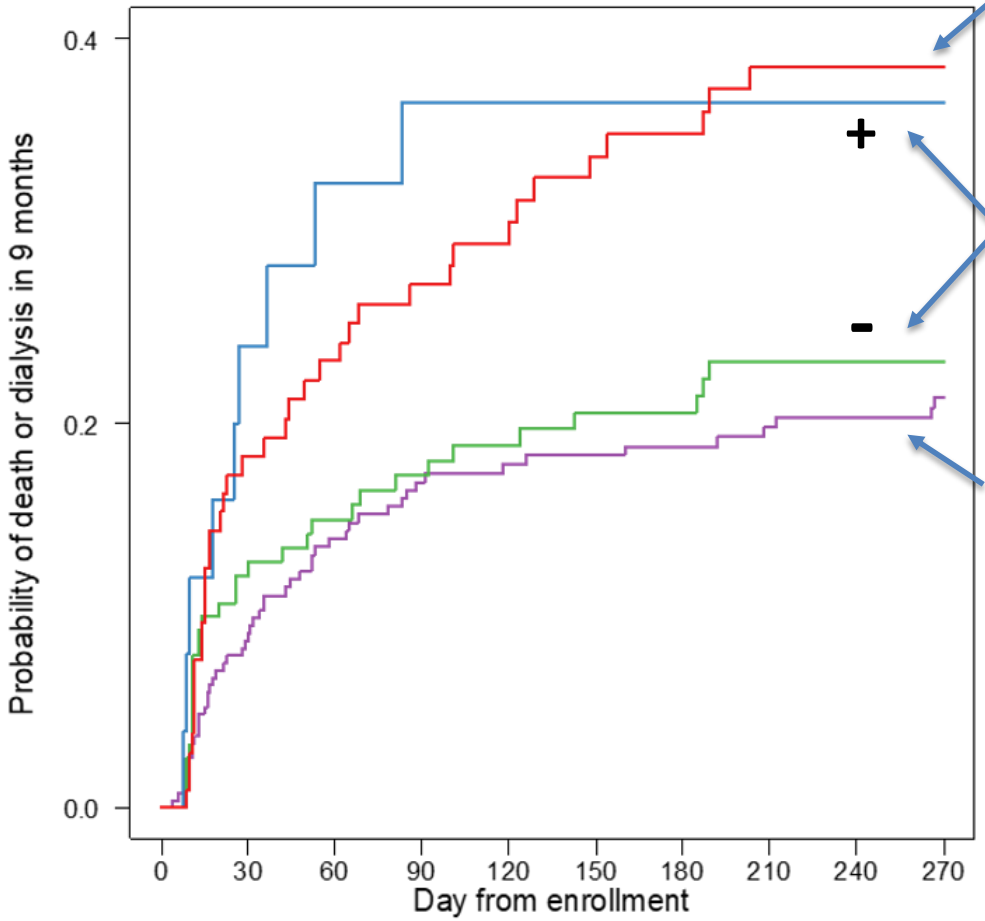
doi: 10.1681/ASN.

JASN
JOURNAL OF THE AMERICAN SOCIETY OF NEPHROLOGY

If these results were generalized to the entire US. . .

Considering the incidence of AKI, these results suggest that implementation of a CDSS for AKI could save >17,000 lives and $1.2 billion annually in the United States.

[TIMP-2]*[IGFBP7] > 2.0 at baseline
AKI with 12h
Progression over 1wk
Death or dialysis 9mo



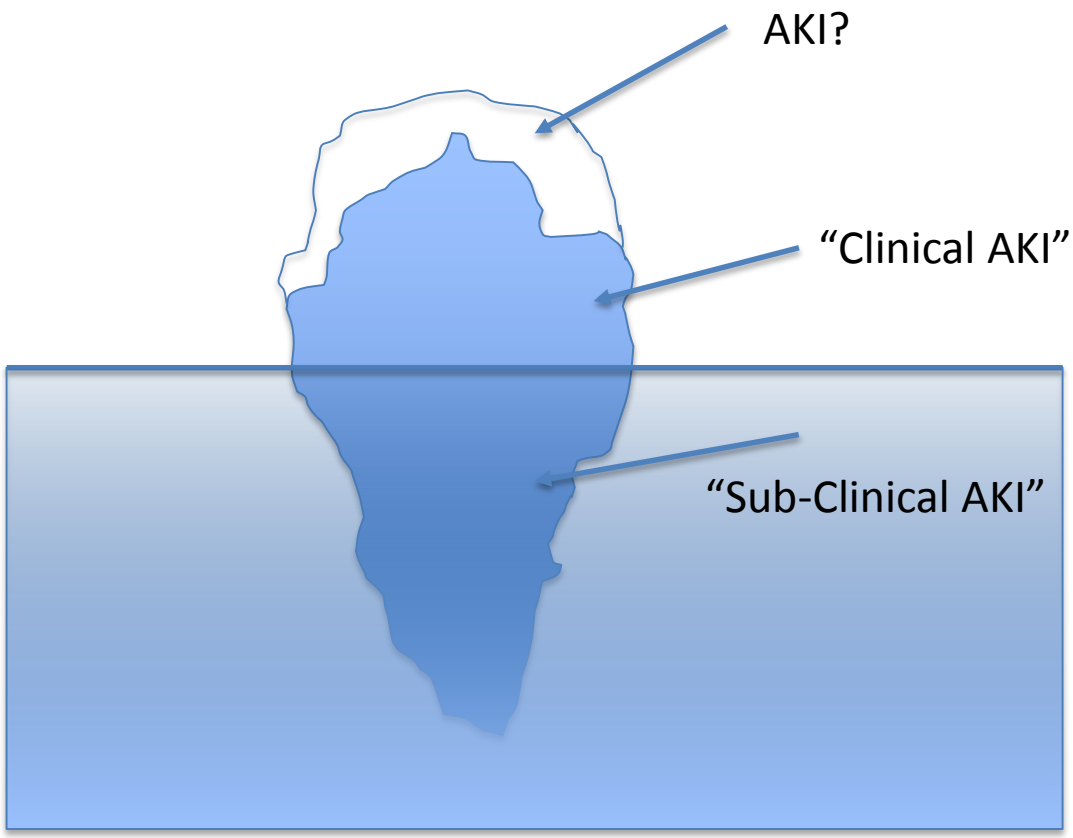
Progression to Stage 2-3

AKI Stage 1
NO Progression to Stage 2-3

NO AKI
NO Progression to Stage 2-3

AKI 0, no progres to AKI 23	280	232	204	195	172	168	166	163	161	135
NC<=2, AKI 1, no progression to AKI 23	154	122	113	110	94	91	91	88	88	73
NC>2, AKI 1, no progression to AKI 23	26	19	16	15	13	13	13	13	13	11
progression to AKI 23	110	85	77	73	62	57	56	53	52	44

Joannidis et al. Under Review


AKI?
“Clinical AKI”
“Sub-Clinical AKI”

Timetable for Next Guideline

- Not "carved in stone" yet
- Controversies paper to publish → Q3 2019
  - Scope document for guideline
- Guideline Process to begin Q1 2020
  - 18-24 months
- Guideline to publish → ~Q4 2022

Conclusions

- KDIGO 2012 Criteria for AKI have greatly improved
  - AKI Epidemiology
  - Clinical trial design
  - Clinical care
- However. . . Limitations include:
  - Function-based only
  - Problems for sensitivity (subclinical) as well as specificity
  - Delayed
- "Damage" markers (may) be faster; "Stress" markers clearly are
- Will there be changes to the consensus criteria?
  - Watch this space. . .
- Will new markers be coming (e.g. for persistent AKI)?
  - REALLY watch this space . . .

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