SUSTAINED IMPACT OF ELECTRONIC AKI ALERT SYSTEM: A DECADE-LONG ANALYSIS

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KEY FINDINGS

AKI Alert System Achieved Sustained Improvements Over 10 Years

RECOVERY ↑
40% → 67% (aOR 2.40)

EARLY CONSULT ↑
6% → 19% (aOR 3.33)

OVERLOOKED AKI ↓
22% → 9% (aOR 0.49)

BACKGROUND & OBJECTIVES

- AKI affects 10-15% of hospitalized patients
- Early detection crucial for preventing adverse outcomes
- Long-term effectiveness of AKI alert systems unclear

Study Objective

Investigate sustained impact of automated AKI alert system over a decade of implementation

METHODS

- 13,301 AKI patients from 246,650 admissions
- Korean tertiary hospital (2013-2023)
- Alert system implemented June 2014
- Three phases analyzed:
  - Pre-alert (2013.1-2014.5)
  - Implementation (2014.6-2019.12)
  - Pandemic (2020.1-2023.12)

RESULTS

Primary Outcomes

AKI Recovery ↑ : **aOR 2.40** (95% CI: 2.16-2.66)

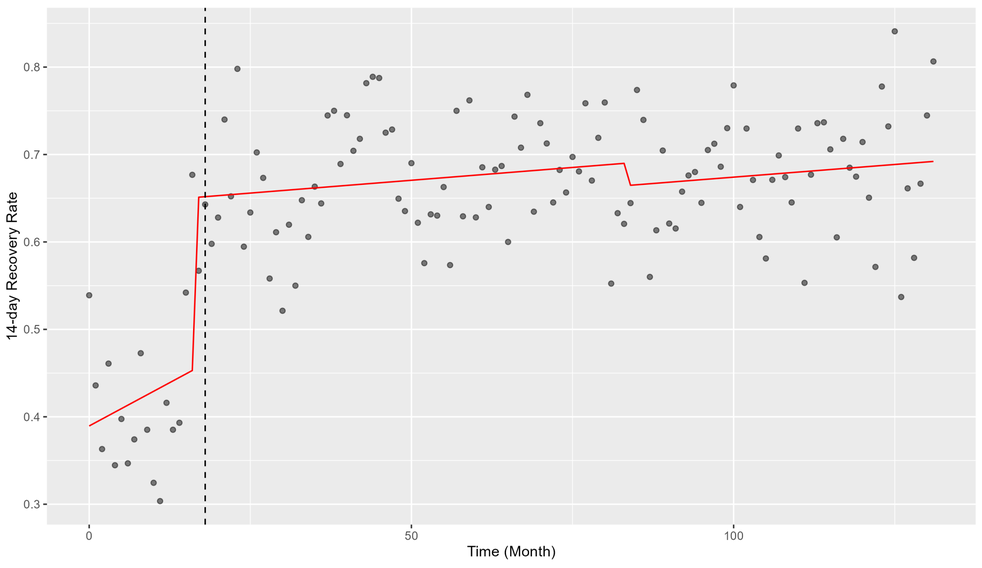

Fig 1. Interrupted time series: alert system immediately improved 14-day recovery rates
(Observed monthly rates with fitted trend lines)

Process Improvements

- ↑ Early nephrology consultation **aOR 3.33** (2.81-3.95)
- ↓ Overlooked AKI cases **aOR 0.49** (0.43-0.55)
- ↑ Medication discontinuation increased

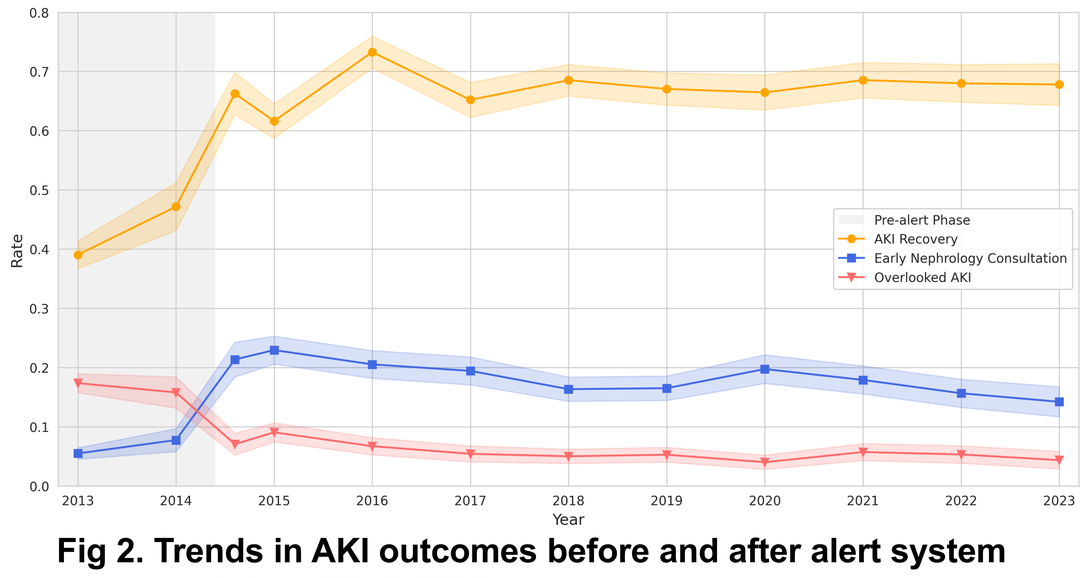

Fig 2. Trends in AKI outcomes before and after alert system implementation (2013-2023)

Long-term Outcomes

- Reduced risk of ≥35% eGFR decline
- Benefits sustained during COVID-19

DISCUSSION & IMPLICATIONS

Clinical Significance

- First decade-long evaluation of AKI alert effectiveness
- Sustained improvements despite changing patient characteristics
- System resilience during pandemic

Key Strengths

- Large cohort with robust methodology
- Interrupted time series analysis
- Propensity score weighting

Study Limitations

- Single-center, retrospective design
- Patient characteristics evolved over time

Future Directions

- AI-driven risk prediction
- Customizable alerts
- AKI care bundles

CONCLUSION

AKI alert systems sustainably improve recovery and early care, supporting long-term renal protection in real-world practice

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