

PK-RULES: CLINICAL RULES TO ENHANCE SAFETY AND EFFICACY OF TREATMENTS THROUGH PHARMACOKINETIC MONITORING

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BACKGROUND AND IMPORTANCE

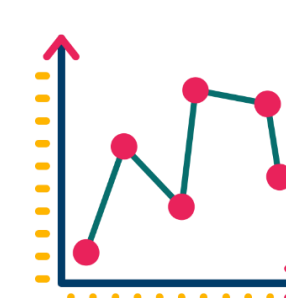
Pharmacokinetic monitoring optimizes therapy and reduces Adverse Drug Events (ADEs), minimizing patient harm and healthcare costs.

AIM AND OBJECTIVES

Improve patient safety and treatment outcomes by integrating pharmacokinetic monitoring into our a **Clinical Decision Support System (CDSS)**.



Early detection of patients needing treatment optimization.



Optimizing therapy based on plasma levels.



Preventing medication errors to reduce ADEs.

MATERIALS AND METHODS

Our pharmacy utilizes a CDSS that integrates hospital data and applies evidence-based clinical rules to:

- ✓ Generate real-time alerts to prevent ADEs
- ✓ Optimize drug therapy with tailored recommendations
- ✓ Enhance patient safety and treatment efficiency



Multidisciplinary team

- Pharmacists
- Medical experts
- IT specialists

- 1 Extensive literature review on pharmacokinetic monitoring
- 2 Development of **clinical rules*** to identify patients

*Validated & refined over 6 months to ensure accuracy

RESULTS

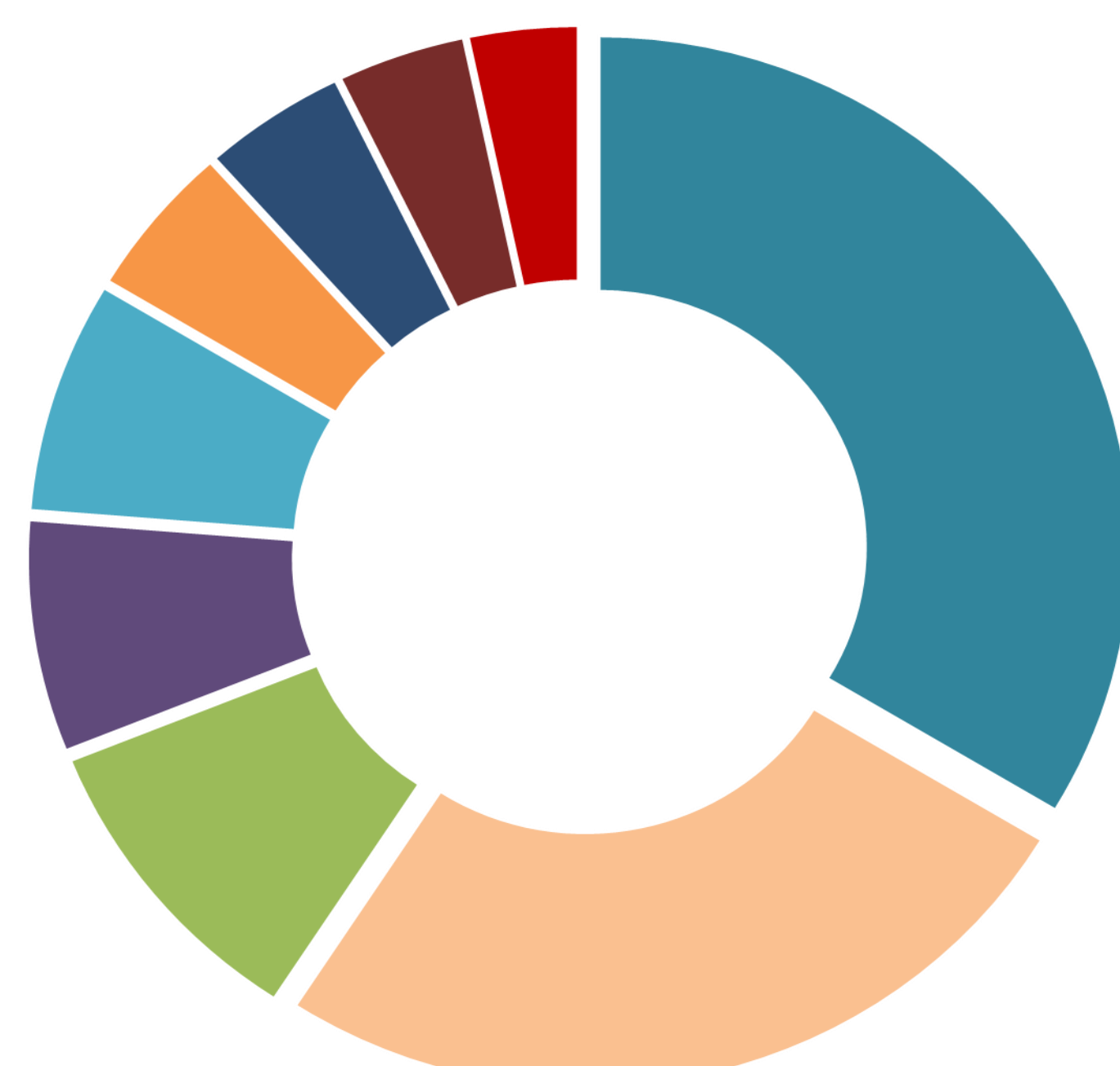
41 clinical rules integrated related to **pharmacokinetic monitoring**



58.2% of interventions based on alert reviews

137 moderate-to-severe ADEs prevented (≥E, NCC MERP)

188 alerts generated (PPV = 0.8)



- Vancomycin (>3 days, Cr > 1.2 mg/dl): **29.3%**
- Vancomycin (with levels): **22.3%**
- Valproate < 50 µg/ml: **8.5%**
- Digoxin level > 1.2 ng/ml: **6.4%**
- Vancomycin trough/single < 9 µg/ml: **6.4%**
- Amikacin (>3 days, no levels): **4.2%**
- Amikacin trough > 2 µg/ml: **3.8%**
- Paracetamol level > 5 µg/ml: **3.4%**
- Voriconazole trough < 2 µg/ml: **2.9%**

Implemented after 6 months of validation



Areas of Intervention

- ✓ **Orthopedics (20.7%)**
- ✓ **Critical Care Units (11.8%)**
- ✓ **Neurosurgery (8.5%)**
- ✓ **Internal Medicine (7.4%)**

CONCLUSION AND RELEVANCE

Integrating pharmacokinetic monitoring rules into the CDSS enhanced ADE detection and optimized treatment. The successful prevention of ADEs underscores the value of tailored pharmacokinetic interventions.

