The Impact of Barcoding Technology on Reported Medication Errors

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BACKGROUND

- Medication errors occur despite education, remediation, variance reporting, PI initiatives, and disciplinary action
- Barcoding technology is on the rise
- What we don't know is how significantly the technology impacts incidence or severity of reported errors over time

PURPOSE

- Examine the impact of Barcode Medication Administration (BCMA) Technology on *reported* medication errors
- Determine whether decreases in error rates or levels of severity were statistically significant after implementation of the technology

METHODS

- Descriptive, longitudinal study
- Number and severity of med errors were examined at yearly intervals before, during, and after BCMA implementation
- No variable manipulation
- All ex post facto data

DATA

- All medication incidents between 2007 and 2010 (random sampling not utilized)
- Annual measurements of number and severity of errors (per 100,000 doses dispensed)
- 4 distinct time periods:
  - Pre-Implementation (2007)
  - Implementation (Jan 2008-Aug 2008)
  - Post-Implementation
    - Year 1 Checkpoint – Sept 2008-Aug 2009
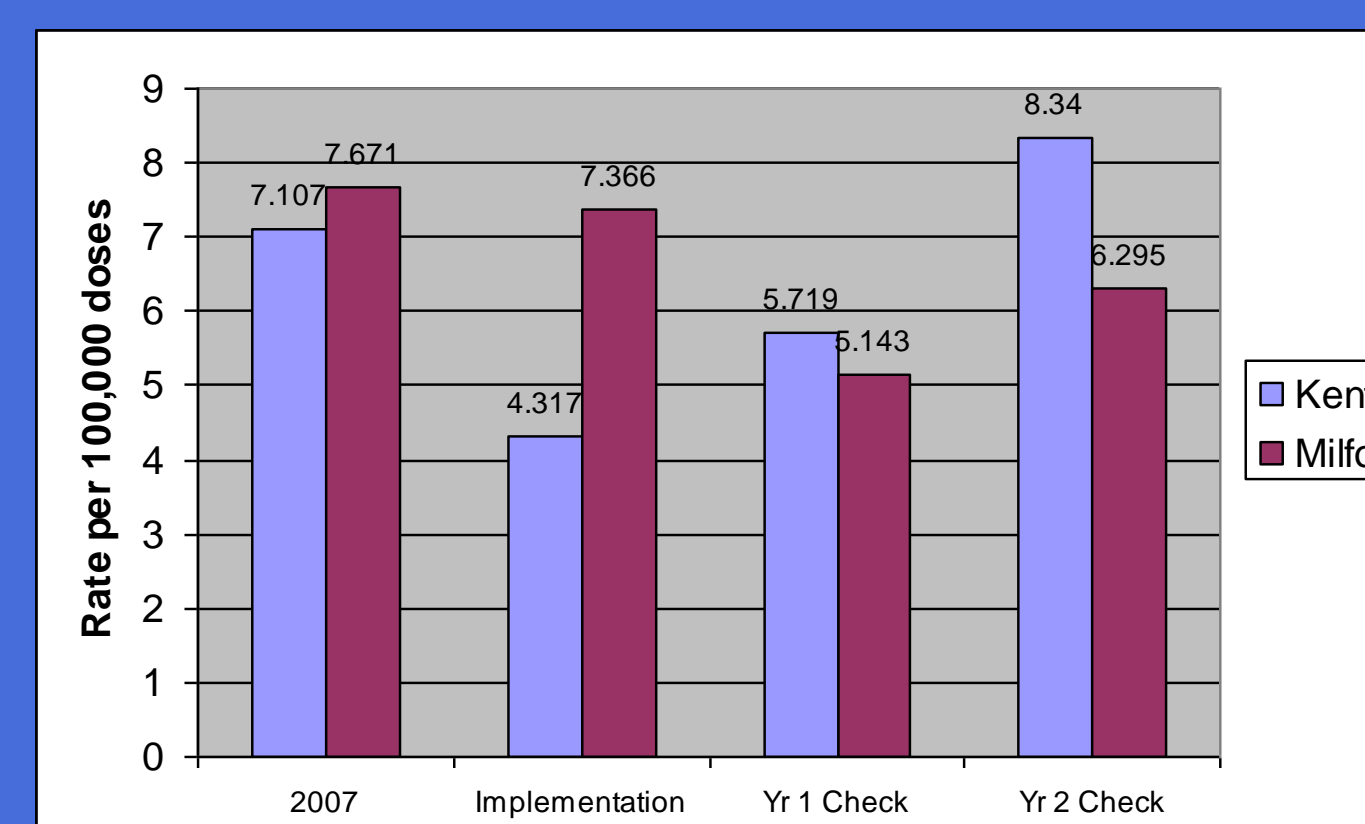   - Year 2 Checkpoint – Sept 2009-Aug 2010

RESULTS

Total Overall Error Rates – no statistically significant difference*
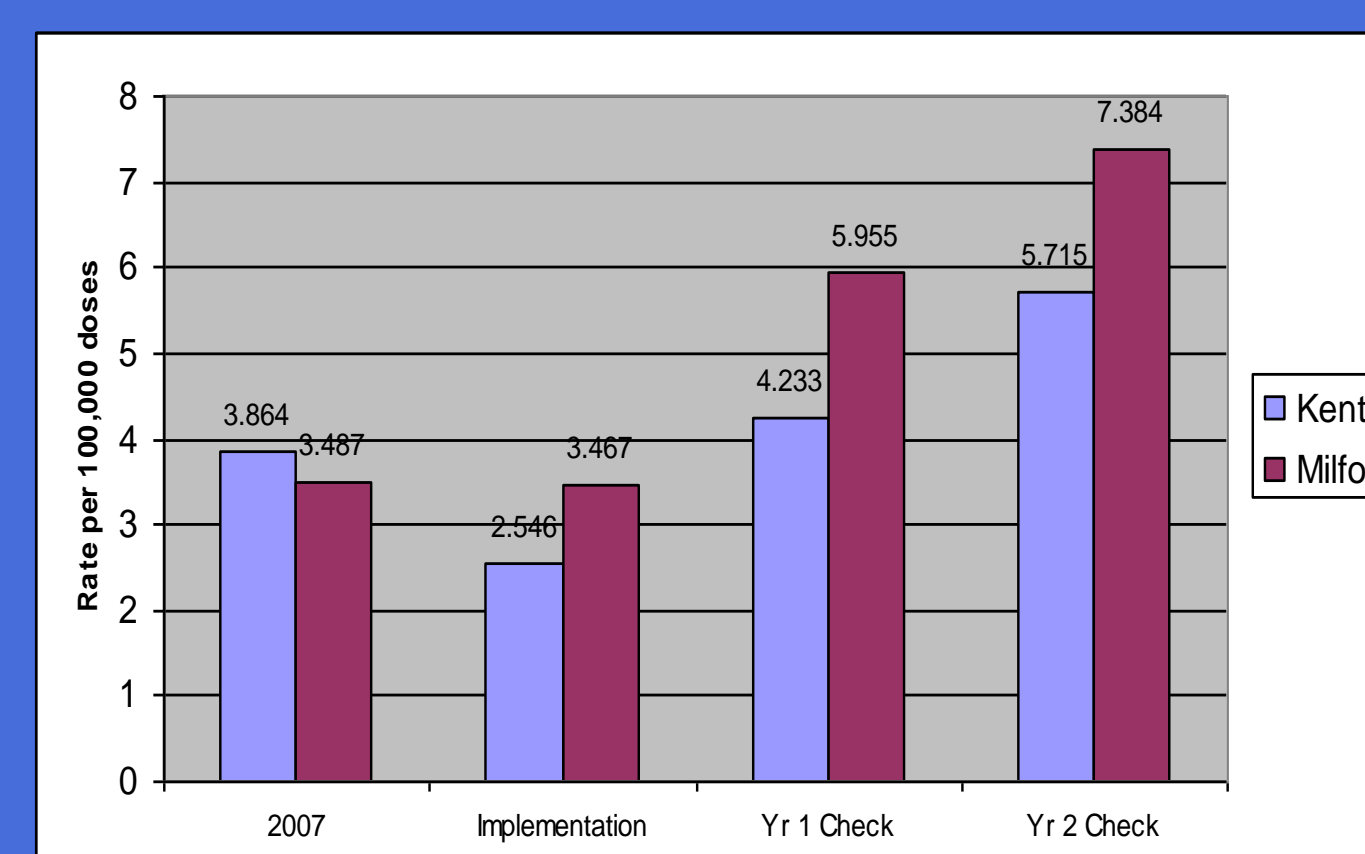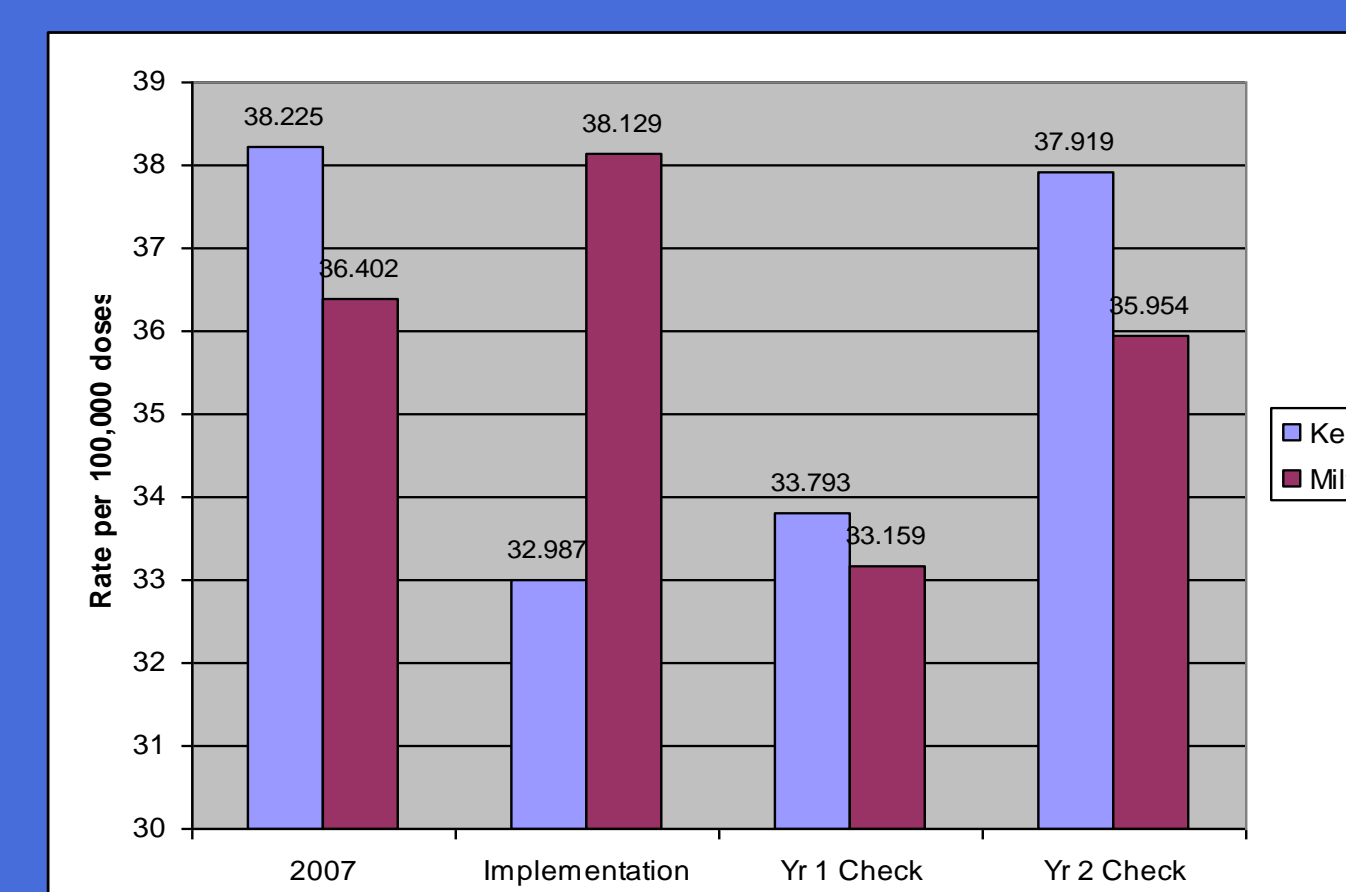
Prescribing and Ordering– Decreased immediately after implementation, but increased in Year 1 and in Year 2 (p=0.012)*
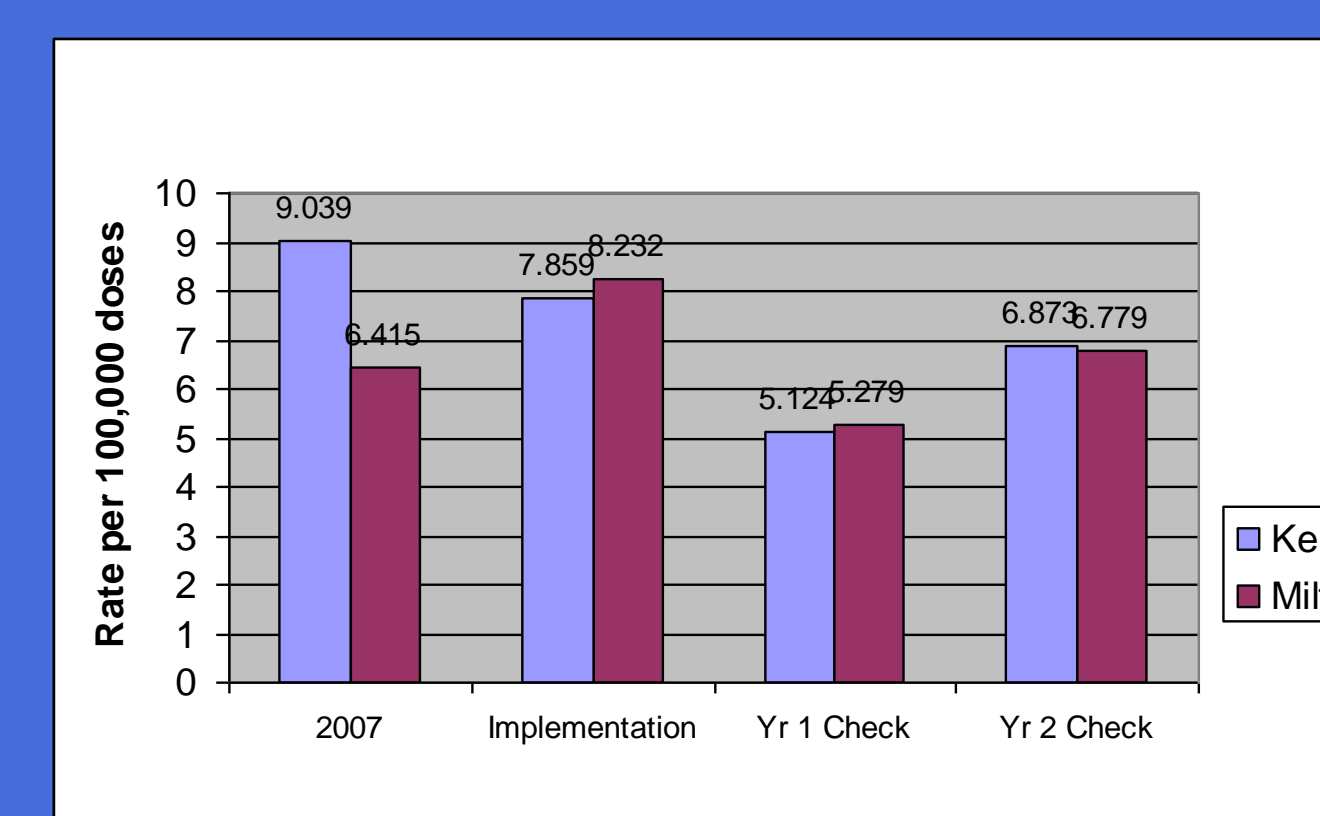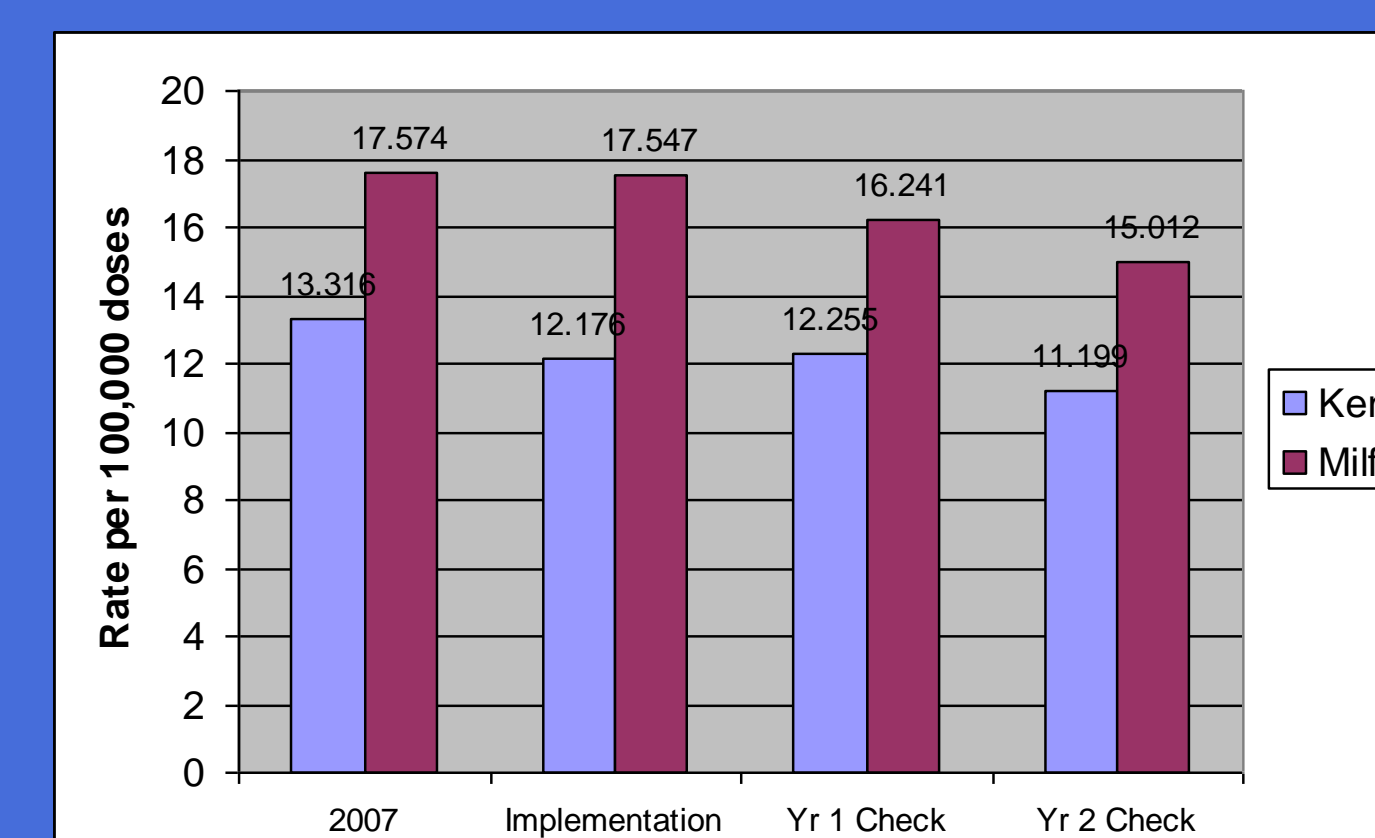

Transcribing– Decreased significantly in Year 1 (p=0.024), but rose significantly in Year 2 (p=0.049)*

Dispensing – Erratic, no statistically significant difference*

Administration – Decreased steadily every year and reached significance in Year 2 (p=0.021)*

Other Findings:

- Near Miss Errors – Statistically significant increase noted by Year 2
- Errors That Reached Patient; Caused No Harm - no SS difference
- Errors That Reached Patient; Caused Harm - no SS difference

*Inferential analyses performed using paired-samples t-test for dependent means

CONCLUSIONS

- BCMA appears to help with the incidence of administration errors but did not have an effect on overall error rates or severity

STUDY LIMITATIONS

- Only one perspective / angle
- Did not correlate to system-generated warnings
- Did not manipulate any variables, no observation, no surveys or interviews

FUTURE RESEARCH

- Body of research in evaluating patient care technology such as BCMA is still in its infancy
- Need more standardization within the industry regarding categorizing errors, to provide benchmarking data
- Need replication studies and studies that are more inclusive of quantitative and qualitative data

REFERENCES

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