

# CERIAS

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## The Role of Information Technology in Providing Patient Safety

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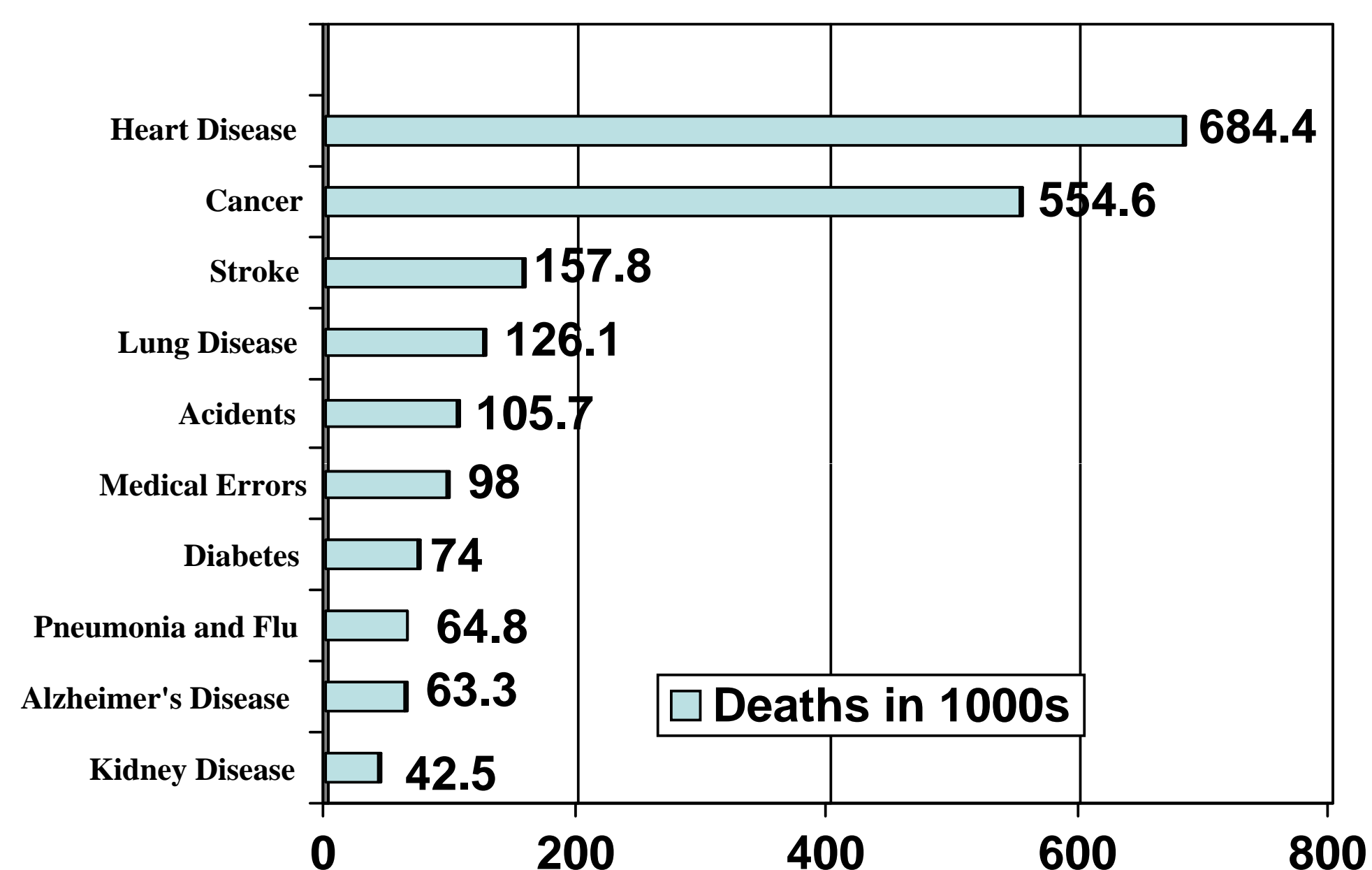
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### Top Ten Causes of Death in the U.S.



### Project Goals and Objectives

- To evaluate the effectiveness of information technology in reducing medical errors.
- To examine developmental trends in the effectiveness of data sharing regarding medication errors in hospitals.
- To use the results to assist hospitals to improve patient safety by reducing medication errors.

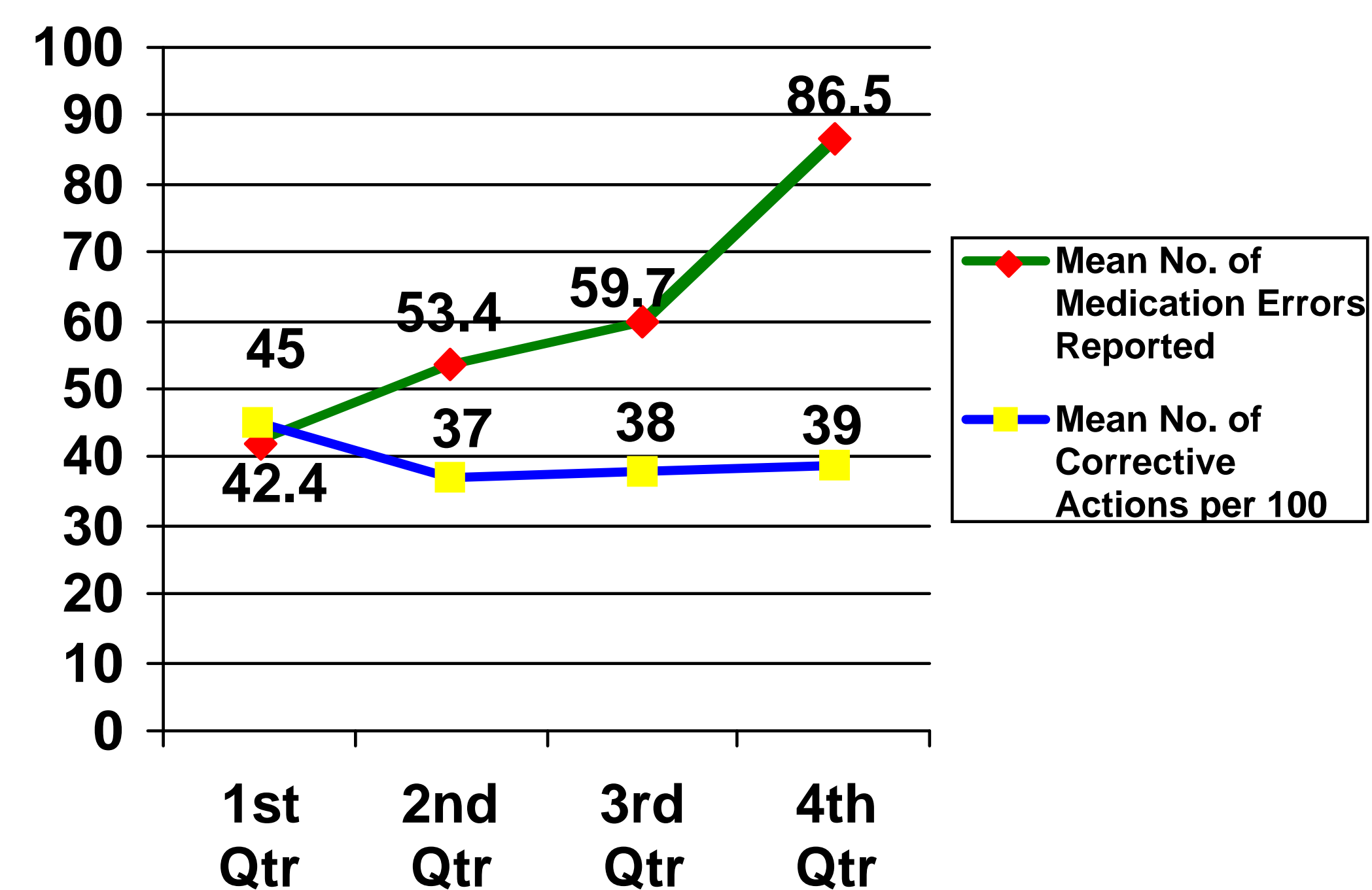
### Methods

- Data
  - 17,000 reports of medication errors from 25 Pennsylvania hospitals
- Analytic Strategy
  - Structural equation modeling
  - Computer simulation

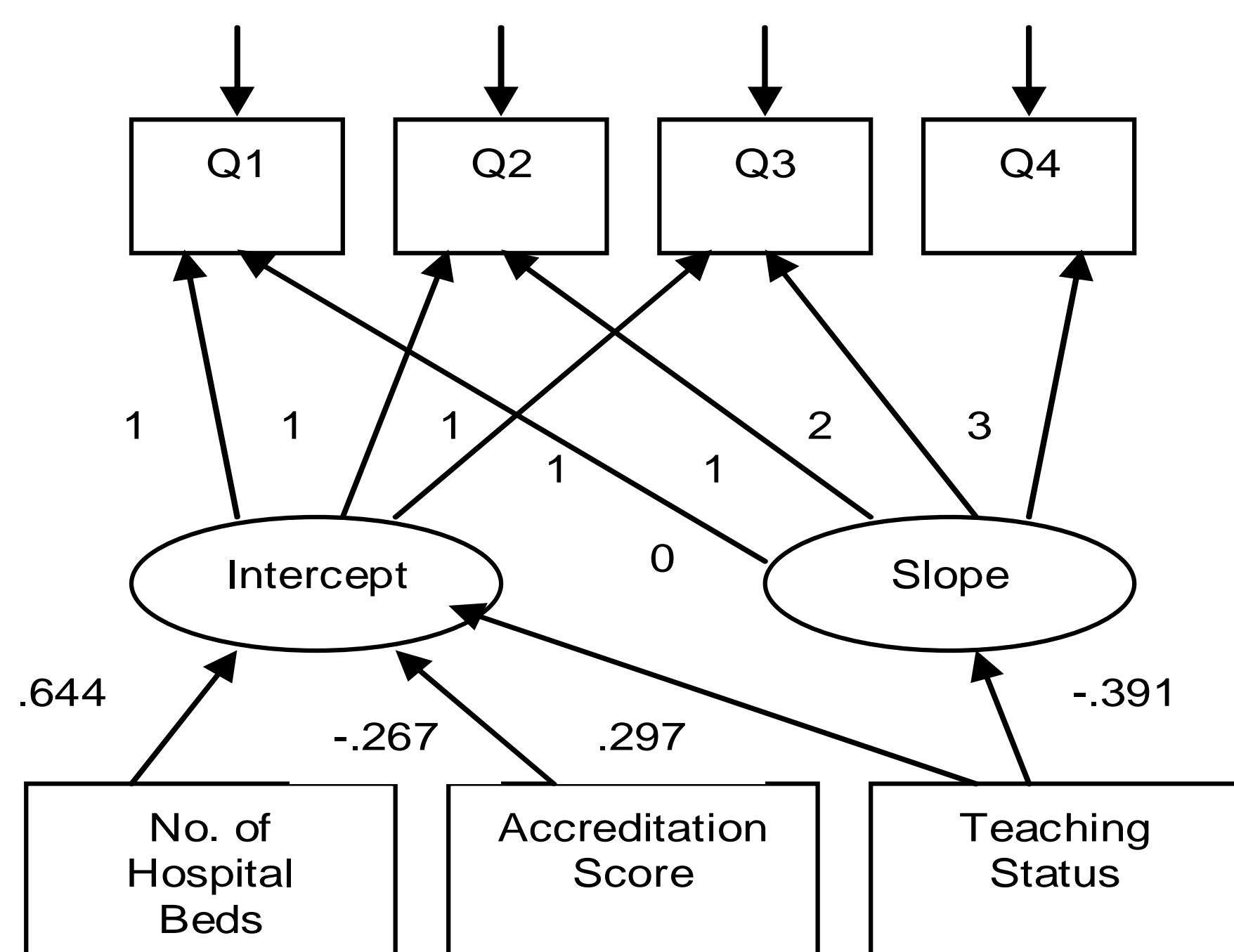
### Results To Date

- Despite significant baseline differences between hospitals, error reporting increased at similar rates across hospitals over four quarters
- By contrast, the reporting of corrective actions remained unchanged
- Improved patient safety requires more than voluntary reporting of errors. Organizational changes are essential for significant improvement in patient safety

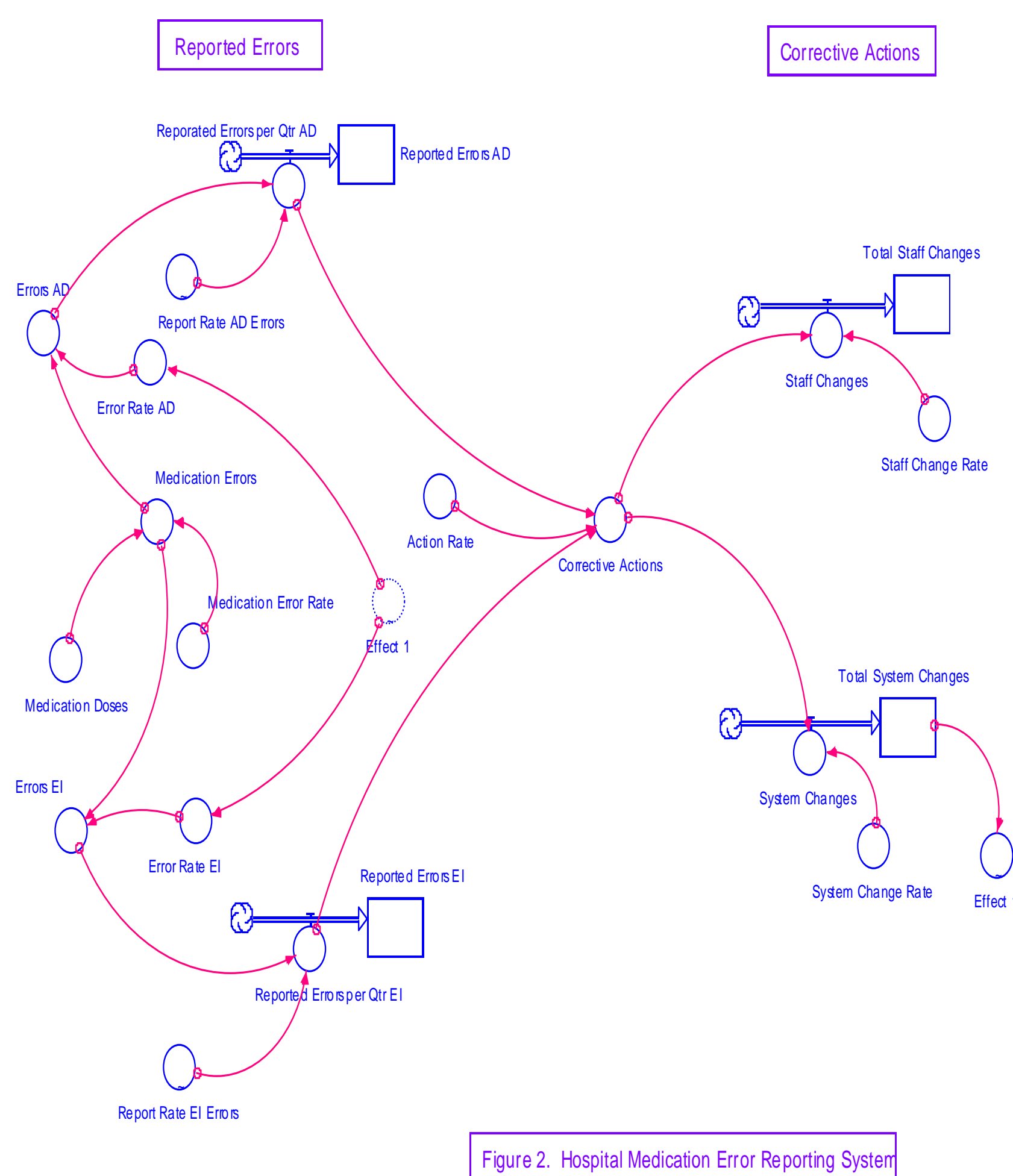
### Medication Errors and Organizational Changes Reported over Four Quarters



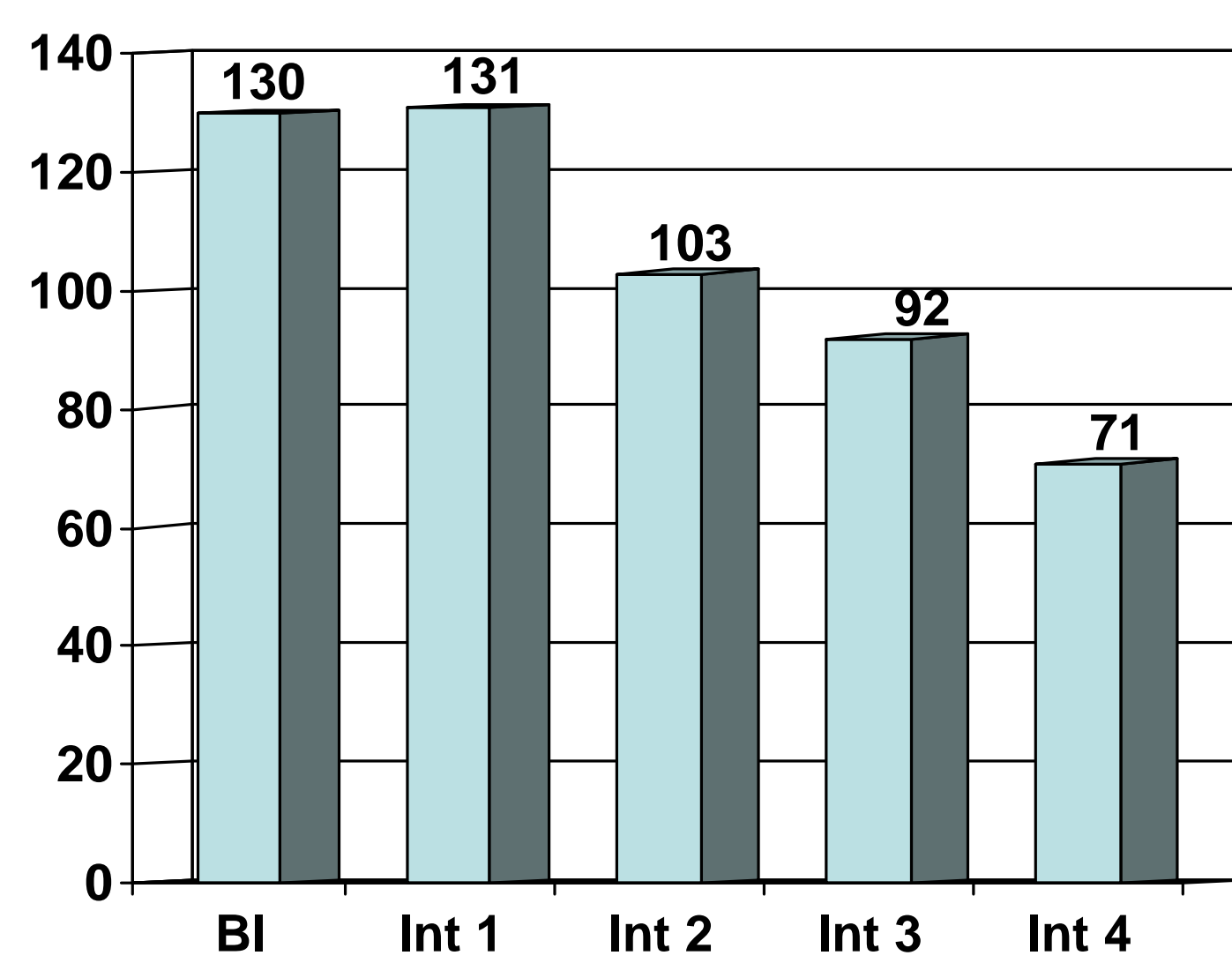
### Latent Growth Curve Model



### Simulation



### Estimated Average Number of Medication Errors that Could Have Results in ADEs by Quarter



- [BL] Existing information system
- [1] Computer-based physician order entry system
- [2] Computer-based physician order entry system that provides dosing information about drugs at the time orders are written
- [3] Pharmacists participation on physician rounds
- [4] Pharmacists participation and organizational commitment to identify causes of errors and make system changes to improve patient safety

### Implications

- Implementation of a basic CPOE system would have little effect on the rate of serious medication errors
- Inclusion of pharmacists on physician rounds would reduce medication errors by 20%
- Organizational Commitment to system changes following medication errors would reduce the error rate by 70%

### Conclusions

- There is a mismatch between patient safety goals and hospital actions to reduce the risk of future medication errors.
- Hospitals increasingly recognize the need to implement error reporting systems
- At the same time they fail to implement organizational and IT changes needed to improve patient safety.
- Actual error reduction will require organizational changes and IT to be carefully institutionalized and integrated into long term plans.