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Role of IT in Improving Patient Safety

- **Prior Institutional Context**
- **Center for Excellence in Patient Safety Research and Practice**
- **Review of IT Structures of PennMedicine**

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Drug Use and Effects Program

- **Adverse drug reaction reporting**
- **Drug usage evaluation**
- **Pharmacy cost containment**

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# Goals of the DUEC Program

- **Improve the quality of patient care by improving the clinical use of medications and minimizing adverse drug reactions**

- **Decrease hospital costs by eliminating the inappropriate use of drugs or by offering acceptable low cost substitutions**

- **Decrease liability associated with the inappropriate use of high risk drugs**

- **Bring HUP into compliance with JCAHO requirements**

- **Contribute new methodology and new clinical information to hospital pharmacoepidemiology**

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ADE Annual Report

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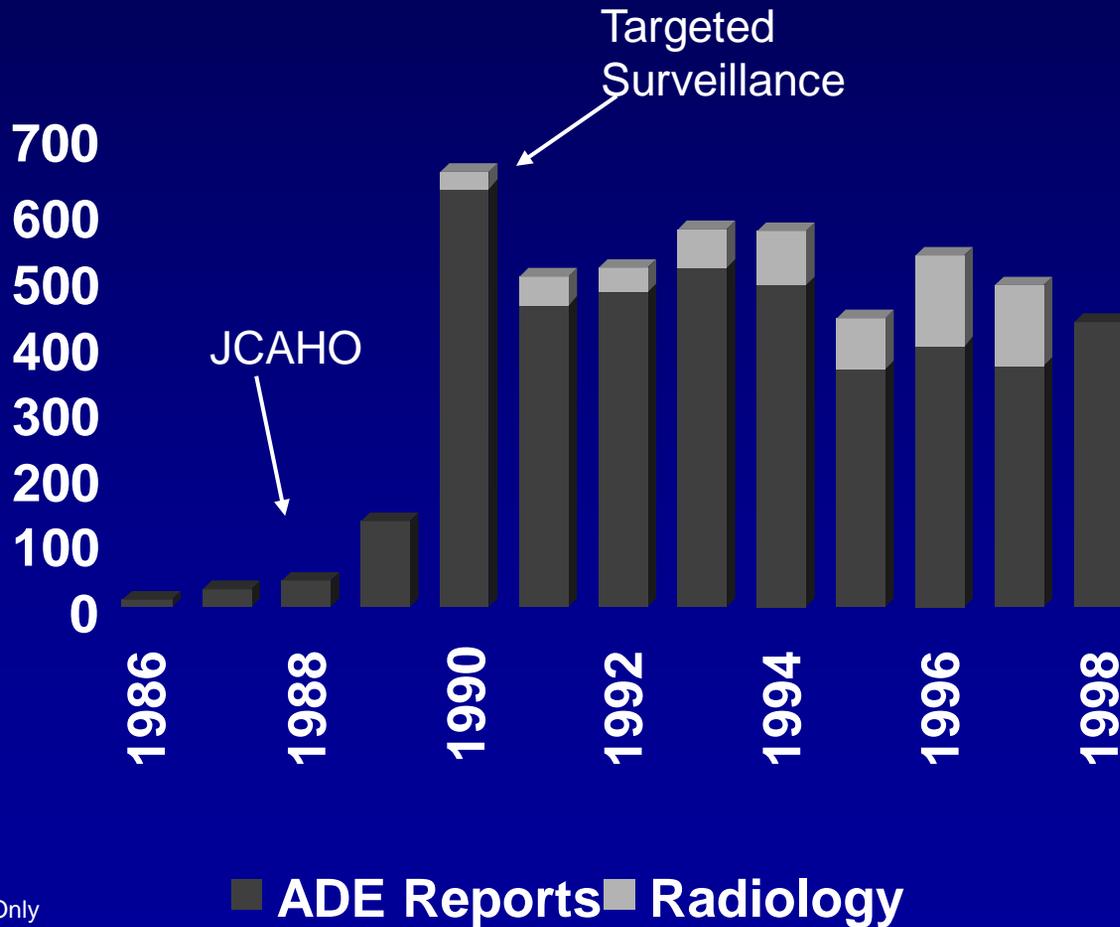
Adverse Drug Experiences - 2003

24%
37%
25%
14%
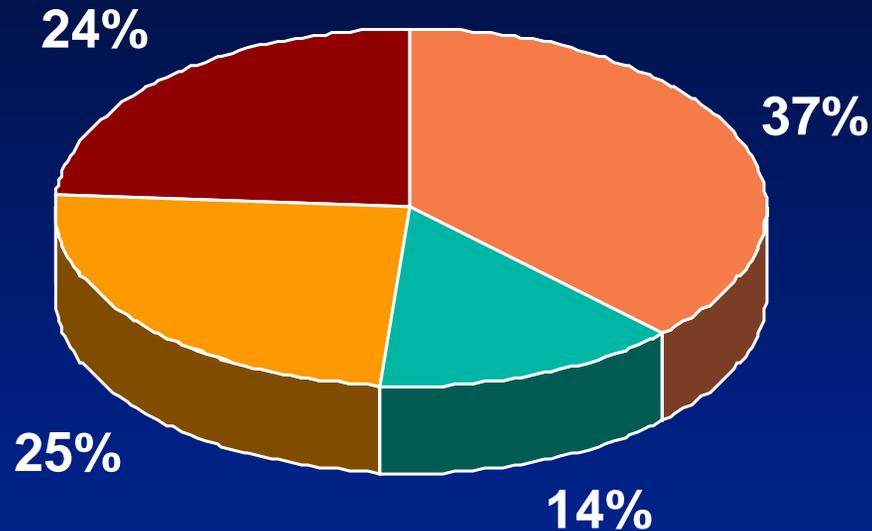
- Serious/Dose related
- Serious/Idiosyncratic
- Mild/Dose related
- Mild/Idiosyncratic

Selected Interventions

- **Antibiotics for acute bronchitis & URI**
- **Antibiotic management program**
- **Anticoagulation management program**
- **Cisapride drug interactions**
- **Deletion of zolpidem from formulary**
- **Limit high-dose hydromorphone PCA**
- **Limit use of long term metoclopramide**
- **Long-term use of PPIs**
- **Proper use of COX2 inhibitors**
- **Underuse of BP meds**

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Improving Patient Safety by Reducing Medication Errors: Overall Organization

- Four projects
- Four cores:
  - Administrative Core
  - Data Collection Core
  - Biostatistics and Data Management Core
  - Dissemination Core

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Project 4: Medication Errors Related to Workplace Stressors (Ross Koppel, PhD--PI)

- **To determine if, and to what extent, the organization of work within a hospital, e.g., schedules, shifts, workloads, etc., affects houseofficers' commission of medication errors**

- **To determine if houseofficers' experience of workplace stress (the cognitive, behavioral, physiological, and psychological experience of stress--called "strains") increase the risk of medication errors**

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Project 4 Study Design

- **A series of cross sectional studies**
- **Data collection: 1) analysis of houseofficers' workloads, shifts, and schedule data from hospitals; 2) surveys administered to houseofficers at several points in their training about workplace stressors and the personal experiences of stress (strain); 3) one-on-one interviews about workplace organization and stressors; 4) focus groups on this topic; and 5) an annual psychometric personality inventory**

Project 4 Outcomes

- **The "near misses" for medication errors detected by experienced pharmacists–in relation to houseofficers' workloads, fatigue, schedules, rotations, shifts, experience, etc**

- **Self-reported strains and errors in relation to workplace stressors**

- **Analysis of the physician computer ordering system in preventing and in, perhaps, facilitating error [4 years to get data!!!]**

Project Four
Qualitative Summary Outcomes

- **An emerging theme focused on the errors created by technological solutions designed to reduce errors**

- **Several examples illustrate the unintended harms caused by the computer system (TDS)**

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IT Integration Plan

1. Using clinical IT systems to improve patient safety

2. Using clinical IT systems to improve research (bioinformatics, epi, hsr, translational)

3. Learning from above and experiences at other institutions re: how IT could be structured, and how to best foster #1 and #2 at Penn

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Committee 1: Process

- **Plan--identify overlap between:**
  - ADRs (patient outcomes, from DUEC data)
  - Pharmacy intervention program
  - Medical errors (PORTS)
  - Malpractice claims
- **Choose initiative(s) to intervene upon**
- **Use IT to quantify problem, intervene, and observe change in rate of problem**

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Other Observations/Lessons Learned-1

- **h/o yrs of delay in easy safety IT recs**
- **Major problems in data quality--answers differed each time data accessed**
- **Inability to identify treating doc in clinical data**
- **Legal concerns re: boundaries between QA/peer review and research**
- **IRB concerns re: evaluations of IT interventions**

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Other Observations/Lessons Learned-2

- **Inadequate programming staff to implement many patient safety initiatives**

- **All interventions have side effects, modifying behavior in unanticipated ways**

- **Avoid alert fatigue**
  - **Results in alerts being ignored**
  - **Means we need to select only those alerts that are most effective in a NNT context**

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"Not enough money is being spent on safety, so be careful."

"I'm firmly convinced that behind every great man is a great computer."