In 1999, the Institute of Medicine succinctly defined “patient safety” as “freedom from injury” – but it then focused on the number of injuries and deaths that occur in hospitals, thus framing subsequent work on patient safety around freedom from injury in the hospital.
What About **Ambulatory** Patient Safety?

• “Ambulatory” care is care provided in physician offices, community clinics, patients’ homes, etc.

• **Far** more patients receive care as outpatients than as inpatients
  – In 2006 there were ~11 billion outpatient visits in the United States, compared to 34.9 million hospital discharges (~300:1 ratio)

• **Errors and harm occur in these settings**
  – In 2009, 52% of all paid medical malpractice claims were for events in the outpatient setting
  – Two-thirds of these claims involved major injury or death.
Inpatient and Ambulatory Physicians Equally Engaged in Patient Safety Activities

Unpublished Data: National Physician Survey on Patient Safety Engagement (N=547)

AMA Center for Patient Safety, 2011-12
Complex Care Settings

“While ambulatory care is often less technologically complex than inpatient care, ambulatory care settings are often more logistically complex and suffer from greater information exchange challenges than do care teams in hospitals.”
Diversity of Patients in Ambulatory Care

“Ambulatory care serves different, more diverse patient populations ranging from healthy individuals to individuals with one or more chronic conditions to those in need of rapid triage to inpatient care.”
Differences Between Care Settings

Hospital (Hover)

Teams of health professionals

- Skilled staff responsible for appropriate care delivery and surveillance
- Staff participation in error prevention and detection efforts

Ambulatory (Alone)

Patients often assume (or expected to assume) an extremely active role

- Monitor and manage their condition
- Conduct self-triage
- Communicate across multiple providers
- Navigate various aspects of health system
10 Years Ago …

The US Agency for Healthcare Research and Quality convened experts to review the state of research in ambulatory patient safety research and establish an agenda for the future

• 13 recommendations
• Need for standard nomenclatures
• Need for interventional work (“experiments and demonstrations”) not just observational studies
In 2010-11, the AMA Center for Patient Safety …

• Conducted a project to summarize the last decade’s research in ambulatory safety
  • ~100 studies reviewed
• 5 major categories reviewed
  • Medication safety
  • Diagnostic errors
  • Office-based surgery & anesthesia
  • Patient roles in ambulatory safety
  • Communication errors

• Conclusion: Some good work, but the research base for ambulatory safety needs to be dramatically strengthened
Methods: A 10-Year Review

CSC contract researchers conduct initial searches

- Using terms such as “ambulatory patient safety” “ambulatory care error” etc.
  
  • Subsequent searches focused on specific topics identified (e.g., ambulatory medication error, ambulatory diagnostic error)

- Generally avoided non-US studies, studies not explicitly about errors or harms, small case studies of a single condition or drug, studies on quality such as inability to access care.

- Criteria often relaxed where very few studies available.

- Expanded to include reviews of work sponsored by AHRQ, Joint Commission, professional societies, etc.

Each section reviewed by 1-2 experts (those most often cited in the section)

Final structure and contents the responsibility of AMA CPS
General Issues Noted

• Questionable generalizability of studies
  – Malpractice claims data (skewed samples)
  – HIT-based research (unusual practices)
  – Patients seen in ED (excludes others harmed)
  – Academic research settings
  – Primary care settings
• Intervention research remains rare
• Definitional and taxonomy issues persist
Definitional and Taxonomy Issues

• Wide array of definitions for ambulatory errors
  “Anything that happens in your practice where you say, that should not have happened and I don’t want it to happen again…”

• Most work did not distinguish errors that caused harm and those that did not
  Similarly, often no distinction between “preventable” and “non-preventable”

• Several taxonomies of types of errors (medication, diagnostic, cognitive, communication, etc)
  Consequently, rarely possible to make comparisons across studies
One Proposed Taxonomy

A Diagnostic Process Errors

C Adverse Events

D Diagnosis Errors
  Delayed, missed, misdiagnosis

From Schiff, 2008
Blood sample switched, Physician omits important part of exam

Incidental prostate CA found on autopsy

Diagnosis Errors
Delayed, missed, misdiagnosis

A
Diagnostic Process Errors

G
Adverse Events

C

D

Adverse Events

- PCN anaphylaxis in newly exposed pt

Diagnostic Process Errors

- Blood sample switched, Physician omits important part of exam

Diagnosis Errors

- Delayed, missed, misdiagnosis

Incidental prostate CA found on autopsy
Adverse Events

- Incidental prostate CA found on autopsy
- Blood sample switched, Physician omits important part of exam
- PCN anaphylaxis in newly exposed pt
- Acute MI death but no missed clues

Diagnostic Process Errors

- Diagnosis Errors: Delayed, missed, misdiagnosis

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PCN anaphylaxis in newly exposed pt

Acute MI death but no missed clues

Blood sample switched, Physician omits important part of exam

Delayed diagnosis of appendicitis because inadequate abd exam

Incidental prostate CA found on autopsy

C
Adverse Events

G
Diagnostic Process Errors

F
Diagnosis Errors

Delayed, missed, misdiagnosis

B

A
Adverse Events

- PCN anaphylaxis in newly exposed pt
- Acute MI death but no missed clues

Diagnostic Process Errors

- Blood sample switched, Physician omits important part of exam
- Delayed diagnosis of appendicitis because inadequate abd exam

Diagnosis Errors

- Delayed, missed, misdiagnosis

Incidental prostate CA found on autopsy

Appendix ruptures and patient dies
Adverse Events

- PCN anaphylaxis in newly exposed pt
- Acute MI death but no missed clues

Diagnosis Errors

- Delayed, missed, misdiagnosis

Diagnostic Process Errors

- Blood sample switched, physician omits important part of exam
- Colon perforation due to colonoscopy done on the wrong patient
- Appendix ruptures and patient dies
- Incidental prostate CA found on autopsy

Delayed diagnosis of appendicitis because inadequate abd exam
Top 6 Types of Errors in Ambulatory Care

• Diagnostic Errors
  – Missed, delayed, or incorrect diagnoses
• Medication Errors
  – Incorrect drugs or dosages
• Laboratory Errors
  – Missed, delayed, or incorrectly interpreted data
• Clinical Knowledge Errors
  – Knowledge, skill, and general performance errors of clinicians
• Communication Errors
  – Patient-doctor, doctor-doctor and other communication errors
• Administrative Errors
  – Errors in managing patient records and scheduling
Diagnostic Errors

• Most common threats to patient safety in ambulatory settings
  – $\frac{1}{4}$ of ambulatory malpractice claims
• Cancer and some others are most commonly associated with claims
• Complicated sets of factors
  – Patient
  – System
  – Practitioner
Diagnostic Errors

“They are often hard to identify and measure, poorly defined and distributed over time and place, and they typically are the result of multiple breakdowns at both individual and system levels. All these factors conspire to make diagnostic errors complex and obscure, frequently detectable only at autopsy.”

Disagreement common on whether an error or delay has even occurred in a given case
As a result, few studies have examined ambulatory diagnostic errors in detail.
Ambulatory Medication Safety

- Most well-researched area (>20 articles)
- Certain drug classes are high risk
  - Narrow therapeutic index
- Certain patient groups are high risk
  - Elderly, >4 medications
- Errors often connected to communication breakdown (incl. patient, pharmacy, etc)
Safety in Office-based Surgery and Anesthesia

- Effort to focus on office-based
  - Studies often include other settings
- Most research from Florida
- Most on plastic surgery / derm
- Harm more commonly documented in cosmetic/elective procedures
- Harm more common with general anesthesia
Patient Factors in Ambulatory Safety

Patient roles complex and increasingly important

– Care transitions
– Managing the plan
– Recognizing problems
– What information to share
– Home monitoring
– Attending consultations
– Returning for further care …
Patient Factors in Ambulatory Safety

• Definition of “error”
  – Patient choices/decisions/actions that contribute to adverse outcomes
  – Active choices versus mistakes
  – Failure to share relevant information

• “Non-adherence” the most commonly studied issue
  – Medication administration and dosing
  – Follow up
  – Role of confusion, low literacy
Ambulatory communication safety

- Huge quantity of research
  - Rarely framed as patient safety
- “Communication breakdown” often cited as contributing to errors
  - Rarely further specified

- Language, literacy, cross-cultural communication problems are all important
- Intervention studies (!) on care transitions and follow-up on abnormal labs
- Also on improving communication
  - Promising areas for future work
Summary: Research Challenges

• Errors in ambulatory environments are often hard to discern, classify, and analyze.
  – For example, the origin of an error may be in one location (clinic) while the adverse event plays out in another (home) and may be discovered in yet another (ED).

• Different roles for patients, families, and physicians.
  – For example, a patient does not adhere to therapy and suffers an adverse outcome. When, if ever, is that an “error”? 
Concluding Thoughts

• Ambulatory issues are pervasive, and becoming more important in our evolving health system
• Talented researchers and policy-makers have worked on ambulatory safety in the last decade
• Yet, the research base remains relatively weak, especially for interventions
• A focused agenda for the next decade
  - Obtain baseline data
  - Select a winnable battle
  - Engage patients and families
  - Link to inpatient efforts
  - Build and use a testing network
What questions or concerns do you have?
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Section Reviewers
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