Ambulatory Patient Safety: Risks and Opportunities

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Session Objectives

- Understand why ambulatory patient safety is different from inpatient
- Describe common patient safety challenges in the ambulatory setting
What is Different About Ambulatory Care?

- Long feedback loops
- Episodic (from provider perspective)
- Signal to noise ratio is low
- Widely distributed
- Limited resources, redundancy
- Patients and providers have many degrees of freedom

The Primary Care Encounter

- Average encounter 12 minutes
- Average time to first interruption--18 seconds
- 75% of patients leave with unanswered questions
- Little time to do all that needs to be done
What do we know about ambulatory safety?

- Medication safety
- Transitions of care
- Missed and delayed diagnosis
  - Test result follow-up

Just the tip of the iceberg…

High Risk Areas

- **Medication safety**
  - Transitions of care
  - Missed and delayed diagnosis
  - Test result follow-up
Outpatient Prescribing Errors

- 1879 prescriptions reviewed from 4 academic practices
  - Med error rate ~8%
  - More advanced computer prescribing checks with decision support would have prevented 95% of potential ADEs
  - Majority of prevention from complete prescriptions, drug-dose, and drug-frequency checking

  *Gandhi et al. JGIM 2005*

- Study of community practices found error rate of 37%
  - Legibility issues very common

  *Abramson et al. JAMIA 2012*

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E-prescribing Impact

- One study of 15 providers before and after implementation of eprescribing
  - Error rates reduced from 42/100 prescriptions to 6/100 prescriptions

  *Kaushal, R. et al. JGIM 2010*

- Another pre-post study
  - Prescription errors decreased from 18% to 8%

  *Devine, E et al. JAMIA 2010*
Electronic Prescribing

- Electronic prescribing with decision support has high potential for reducing serious medication errors
- Need to improve current decision support
  - Streamlined knowledge bases and tiered alerting have higher acceptance rates
  - What is our ideal acceptance rate??
    Sensitivity/specificity? Best way to display?
- More work needs to be done to maximize the clinical benefits

Non-adherence

- In one study of 195,000 newly prescribed e-prescriptions, only 72% were filled
  - Non-adherence was common for medications for chronic conditions such as hypertension, diabetes, hyperlipidemia
    Fischer M. et al. JGIM 2010
- “Medication nonadherence: A diagnosable and treatable condition”
  - Often undetected and untreated
  - Clinicians not trained to screen or treat
  - Need to understand patient beliefs and values
  - Now tied into quality measures
    Marcum ZA et al. JAMA editorial 2013
High Risk Areas

- Medication safety
- **Transitions of care**
  - Missed and delayed diagnosis
    - Test result follow-up

Lost in Transition

- **Transitions of care** are increasingly recognized as hazardous times for patients

- Medical errors due to discontinuity of care between inpatient to outpatient setting are common
  - 49% of charts reviewed had a “discontinuity error” related to work-up, medication discontinuity, or test follow-up.

*Moore. J Gen Int Med 2003*
Transitions of Care

- Medication reconciliation is a big issue
  - Need to ensure correct medication list at all times
- One study found that half of all medication errors occurred at interfaces of care
  (Resar, Luther Middlefort Hospital)
- Recent study shows over half of patients with a medication discrepancy at time of hospital admission
  (Cornish, Arch Int Med 2005)
Tests Pending

- 41% of patients had test results return after discharge
- Of these, 9% potentially actionable
- MDs unaware of 2/3 of these results
  - 12% required urgent action
  - 37% required some action


Unresolved Medical Issues

- 28% of discharges have recommendations for outpatient workups post discharge
  - E.g. procedures (endoscopy), tests (CT), referrals
  - Half not documented in the discharge summary
- Within 6 months of discharge, 36% were not completed
  - Increasing time to the initial postdischarge visit decreased likelihood
  - Documentation of the workup in the discharge summary increased the likelihood

In Conclusion

- Numerous challenges to accomplish safe transitions of care
- Need seamless flow of medication information between settings
- Targeted interventions in the discharge process and post-discharge period have great potential

High Risk Areas

- Medication safety
- Transitions of care
- **Missed and delayed diagnosis**
  - Test result follow-up
Missed and Delayed Diagnosis

- Most frequent outpatient malpractice claims are diagnosis-related, mainly cancer
- 85% of errors occurred in physician’s offices
  - Primary care providers most commonly involved (42%)
  - Not surprising given time constraints, variety of complaints, low signal to noise
- Median duration of delay was 303 days

Diagnostic Process of Care in Ambulatory Setting

1. Patient notes problem and seeks care
2. Physician performs history / physical
3. Ordering of diagnostic / lab tests
4. Performance of tests
5. Interpretation of tests
6. Receipt / transmittal of test results
7. Follow-up plan & referral (if indicated)
8. Patient adherence with plan
Diagnostic Process of Care in Ambulatory Setting

1. Patient notes problem and seeks care (9%)
2. Physician performs history / physical (42%)
3. Ordering of diagnostic / lab tests (55%)
4. Performance of tests (9%)
5. Interpretation of tests (37%)
6. Receipt / transmittal of test results (13%)
7. Follow-up plan & referral (if indicated) (45%)
8. Patient adherence with plan (17%)

Contributing Factors

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<thead>
<tr>
<th>Cognitive Factors</th>
<th>Prevalence</th>
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<tr>
<td>Judgment</td>
<td>99%</td>
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<td>Vigilance</td>
<td>79%</td>
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<td>Knowledge</td>
<td>59%</td>
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<td>Communication Factors</td>
<td>48%</td>
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<td>Handoffs</td>
<td>30%</td>
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<tr>
<td>Clear Lines of Responsibility</td>
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<td>Another Failure of Communication</td>
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<table>
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<tr>
<th>Patient Related Factors</th>
<th>Prevalence</th>
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<tr>
<td>Nonadherence</td>
<td>46%</td>
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<td>Atypical Presentation</td>
<td>22%</td>
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<th>Other Systems Factors</th>
<th>Prevalence</th>
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<tr>
<td>Supervision</td>
<td>8%</td>
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<tr>
<td>Technology-Related</td>
<td>3%</td>
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<tr>
<td>Workload</td>
<td>7%</td>
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<tr>
<td>Interruptions</td>
<td>3%</td>
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<tr>
<td>Fatigue</td>
<td>1%</td>
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### Complex Etiology

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<th>Average Number per Case</th>
<th>Percentage with &gt; 1 per case</th>
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<tr>
<td>Process Breakdowns</td>
<td>3</td>
<td>80%</td>
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<tr>
<td>Contributing Factors</td>
<td>3</td>
<td>85%</td>
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<tr>
<td>Clinicians</td>
<td>1.6</td>
<td>43%</td>
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### High Risk Areas

- Medication safety
- Transitions of care
- Missed and delayed diagnosis
- **Test result follow-up**
Breakdowns in Follow-Up

- Many physicians not satisfied with how they manage test results (Poon, Archives)
- A typical PCP reviews 800 chem-hem, 40 rad and 12 path reports per week (Poon, J Biomed Info 2003)
- Results in outpatient setting often take a long time to return so easier to forget about them
- Paper based charts subject to errors
- No easy way to keep track of ordered tests

Breakdowns in Follow-Up

- Unclear definitions of adequate follow up
- Lack of standard communication strategies
- Lack of failsafe mechanisms
- Diffused Responsibilities
  - Especially when multiple providers
  - E.g. Polyp biopsied on colonoscopy is to be follow up by (a) Gastroenterologist, (b) Pathologist, (c) PCP?
Recommendations: Testing

- Need to develop fail-safe mechanisms of communication and explicit criteria for communication
  - Testing areas (Radiology, Cardiology, Laboratory) should create explicit definitions of which results are considered abnormal and need direct communication.
  - Document this explicit direct communication
  - Clear escalation strategies (if pages aren’t answered)

Recommendations: Role of ordering physician

- Ordering physician needs to document reason underlying ordered test and their contact information
- Ordering physician needs back-up systems to follow up if they are unavailable
- Ordering physicians should have mechanisms to track results ordered and ensure results are reviewed in a timely way
Test Result Communication Summary

- Reliable communication of test results is a major ambulatory safety issue
- Need for these cases to get reported via safety reporting (ensures appropriate follow-up with depts such as path or radiology)
  - Critical for learning/designing improvements
- No magic bullets, but lots of ongoing work in this area

Failure to Follow-Up

- Critical ambulatory safety issue
  - 75% of physicians did not notify patients of normal results
  - 33% of physicians did not even notify of abnormal results (Boohaker et al, Archives1996)
  - Approximately 1/3 of women with abnormal mammograms or pap smears do not receive appropriate follow-up care
Breakdowns in Follow-Up

- Delays in reviewing test results
  - Many physicians not satisfied with how they manage test results (Poon, Archives)
  - A typical PCP reviews 800 chem-hem, 40 rad and 12 path reports per week (Poon, J Biomed Info 2003)
  - Results in outpatient setting often take a long time to return so easier to forget about them
  - Paper based charts subject to errors
  - No easy way to keep track of ordered tests

Breakdowns in Follow-Up

- Unclear definitions of adequate follow up
  - Little agreement among pathologists and clinicians about what is a critical value and what is urgent (Pereira, Am J CI Path)
- Lack of standard communication strategies
- Lack of failsafe mechanisms
- Diffused Responsibilities
  - Especially when multiple providers
  - E.g. Polyp biopsied on colonoscopy is to be follow up by (a) Gastroenterologist, (b) Pathologist, (c) PCP?
Take Home Points

- Starting to know more about ambulatory risk areas
  - Transitions
  - Medications
  - Missed and delayed diagnosis
- Also need to focus on developing ambulatory culture and infrastructure
- Focus on systems and process redesign
  - IT is a powerful tool, but much can be done with paper processes
- Now is the time to move beyond inpatient to ambulatory!