Diagnostic Checklists

John W. Ely, MD
Family Medicine
University of Iowa

- Pick up the pace. Don’t digress on every slide (I had a patient with this, I had a patient with that.)
- Put in the notes section what I should say at each slide, including what’s on the axes of the graphs and the bottom line for each slide.

Disclosures

- No financial disclosures.
- I’m biased
  - toward checklists
  - toward paper checklists
Objectives

What are they?

Familiar Checklists

- Grocery list
- Pack list
- Honey-do list
- Preflight checklist
- Medical checklists
  - Operating room*
  - Central line insertion**

Diagnostic Checklist

Differential diagnosis
- Primary care
- Clinical lumping
- Prevalence

Symptoms (n=73):
- Abdominal Pain:
  - Dyspepsia
  - Viral gastroenteritis
  - Constipation
- Chest pain:
  - Chest wall pain
  - Gastroesophageal reflux
  - Pleurisy
- Shortness of breath:
  - Asthma, Chronic obstructive pulmonary disease
  - Fever
  - Deconditioning

Diseases (mean=22 diseases per symptom)
(range=8-59 diseases per symptom)
Anecdotal “Save”

42 yo woman with migraine headaches for many years, well controlled on amitriptyline 100 mg at bedtime and metoprolol 50 mg twice a day. Routine visit. Heart rate: 104.

Sinus tachycardia
Checklist (7 physicians) (4 FP, 3 ED)
Usual care (7 physicians) (5 FP, 2 ED)

Randomized Clinical Trial

14 physicians

53 patients Error rate 11%
47 patients Error rate 18%


What motivated them?

Causes of Diagnostic Error Among Internists (N=100 errors; 25 cognitive causes)

Causes of Diagnostic Error Among Internists (N=583 errors; 34 causes)

- Failure to consider the diagnosis
- Failure to order needed test
- Erroneous lab/x-ray reading
- Too much weight on competing diagnosis
- Failure to elicit adequate history


Checklist has only one purpose

- **Purpose**: Prevent premature closure and failure to consider the correct diagnosis.

- **Not**: Narrow the differential or provide the most likely diagnosis for an individual patient (e.g., Isabel, Watson, DxPlain).

What are they (continued)?
Types of Diagnostic Checklists

- Mnemonics
  - VINDICATE, VITAMIN D
- General de-biasing checklists
  - Graber ML, et al.*
- Symptom-specific checklists
  - Topic of this session

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High-Risk Situations

- Are there “must-not-miss” diagnoses that need consideration?
  - Did I just accept the first diagnosis that came to mind? (Which bias is this?)
  - Was the diagnosis suggested to me by the patient, nurse or another MD? (Which bias is this?)

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What to do in high risk situations

1. Pause to reflect - Take a diagnostic “time out.”
2. Consider the universal antidote: “What else could this be?”
3. Make sure the patient knows when and how to get back to you [and decide if it should be the other way around].

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How many diseases should be on each checklist?

- Pareto Principle (80 – 20 Rule)
  - 80% of the sales come from 20% of the clients.
  - 80% of earthquakes are in the lowest 20% of the range of earthquake size.
  - 80% of emergency room patients present with 20% of all possible symptoms.
  - 80% of patients with chest pain have 20% of the diseases that cause chest pain.

National Hospital Ambulatory Medical Care Survey (NHAMCS) Emergency Room, 2011
(n=24,302 visits; n=541 symptoms)

Causes of Abdominal Pain
(New Zealand; n=4606 visits; n=33 diseases)
### Diagnostic Checklist vs. Normal Checklist

<table>
<thead>
<tr>
<th>Diagnostic Checklist</th>
<th>Normal Checklist (grocery, preflight, etc.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental tasks</td>
<td>Physical tasks</td>
</tr>
<tr>
<td>Unclear when to check off an item</td>
<td>Clear when to check off an item</td>
</tr>
<tr>
<td>Long but incomplete</td>
<td>Short but complete</td>
</tr>
<tr>
<td>Not clear when to use it</td>
<td>Clear when to use it</td>
</tr>
</tbody>
</table>

### Diagnostic Checklist vs. Conventional Differential Diagnosis

<table>
<thead>
<tr>
<th>Diagnostic Checklist</th>
<th>Conventional Differential Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinical terms</td>
<td>Anatomic or pathologic terms</td>
</tr>
<tr>
<td>Organized by prevalence</td>
<td>Organized by anatomy, pathology, body system</td>
</tr>
<tr>
<td>Clinical lumping and splitting</td>
<td>Pathologic lumping and splitting</td>
</tr>
<tr>
<td>Simple list</td>
<td>Categories and subcategories</td>
</tr>
<tr>
<td>Don’t miss diagnoses</td>
<td>--</td>
</tr>
<tr>
<td>Often missed diagnoses</td>
<td>--</td>
</tr>
</tbody>
</table>

### Diagnostic Checklist vs. Isabel

<table>
<thead>
<tr>
<th>Diagnostic Checklist</th>
<th>Isabel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodates one symptom</td>
<td>Accommodates multiple symptoms</td>
</tr>
<tr>
<td>Ordered by disease prevalence</td>
<td>Ordered by likelihood in an individual</td>
</tr>
<tr>
<td>Limited evidence of efficacy in practice</td>
<td>Limited evidence of efficacy in practice</td>
</tr>
<tr>
<td>Purpose: Force consideration</td>
<td>Purpose: Narrow differential</td>
</tr>
<tr>
<td>Use with “every” patient at bedside</td>
<td>Use with challenging patients in evening</td>
</tr>
<tr>
<td>Paper (fast but fat)</td>
<td>Computer (slow but slim)</td>
</tr>
<tr>
<td>Free</td>
<td>Costs money</td>
</tr>
</tbody>
</table>
How to use them?

Physician Responses to Checklist Items

- “Yes, that’s what I think it is.”
- “No way.” or “Very unlikely.”
- “We should rule that out.”
- “That will be caught with the chest x-ray.”
- “Back burner for now.”
- Inadequate consideration (skip over)

How to use the checklist

- Read it after history and physical and initial discussion of impression and plan with patient.
- Read it aloud in front of the patient.
- Don’t skip any diseases, including cancer, psychiatric causes, abuse.
- Pause briefly after reading each diagnosis.
- Use it “every time.”
How can we get our doctors to use them?

“We don’t like checklists . . .”

“We don’t like checklists. They can be painstaking. They’re not much fun . . . It somehow feels beneath us to use a checklist, an embarrassment. It runs counter to deeply held beliefs about how the truly great among us – those we aspire to be – handle situations of high stakes and complexity. The truly great are daring. They improvise. They do not have protocols and checklists.”

<table>
<thead>
<tr>
<th>Diagnostic Checklist</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Good</strong></td>
</tr>
<tr>
<td>Tells patient you care</td>
</tr>
<tr>
<td>Tells patient you are being thorough</td>
</tr>
<tr>
<td>Easy way to address sensitive topics</td>
</tr>
<tr>
<td>Forces you to address sensitive topics</td>
</tr>
<tr>
<td>Helps avoid premature closure</td>
</tr>
<tr>
<td>May provide legal defense</td>
</tr>
<tr>
<td>May prevent diagnostic errors (?)</td>
</tr>
</tbody>
</table>
How to gain wide implementation

• Speed is more important than accuracy (or anything else).

• Where’s the evidence?

How to gain wide implementation

Airline Pilots

Thousands of incremental improvements based on experience

Physicians

Evidence of efficacy from randomized clinical trial

Summary

• Checklists may help prevent the most common cause of diagnostic errors (failure to consider the correct diagnosis).

• Before widespread promotion, checklists need further development and testing.

• john-ely@uiowa.edu