Uncertainty in Clinical Medicine – Avoiding Errors by Saying “I don’t know”

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Disclosures

• I have no financial disclosures

• But I make errors

• And I’m uncertain about a lot
Our objectives for today

• Uncertainty in Medicine
  – What have we learned about it?
  – How can we learn to embrace uncertainty?
  – How do we talk about it?
WHY ARE WE HERE?
Did we ever stop to say “I wonder?”

Did we ever stop to say “I don’t know?”

Did we ever stop to say “What if we are wrong?”
In the Moment

Doubt

A father writes about the death of his daughter, offering his perspective on the system that broke down and efforts to reduce medical errors. He has requested that his name be withheld from the published version of this narrative.

There is so much knowledge, so much capacity, so much data. And yet with all of these assets, the chances for confusion, miscommunication, and conflicting analysis remain, and may even be enhanced. In medicine, a field like no other in its capacity to intervene between life and death, maybe it’s time to reexamine the value of doubt in the diagnostic equation.
The Diagnostic Process

- Patient Experiences a Health Problem
- Patient Engages with Health Care System

Information Gathering

Working Diagnosis

Information Integration & Interpretation

- Clinical History and Interview
- Physical Exam
- Referral and Consultation
- Diagnostic Testing

Communication of the Diagnosis

- The explanation of the health problem that is communicated to the patient

Treatment

- The planned path of care based on the diagnosis

Outcomes

- Patient and System Outcomes
  Learning from diagnostic errors, near misses, and accurate, timely diagnoses

TIME
Why?
Diagnostic Error in Internal Medicine

Mark L. Graber, MD; Nancy Franklin, PhD; Ruthanna Gordon, PhD

**Background:** The goal of this study was to determine the relative contribution of system-related and cognitive components to diagnostic error and to develop a comprehensive working taxonomy.

**Methods:** One hundred cases of diagnostic error involving internists were identified through autopsy discrepancies, quality assurance activities, and voluntary reports. Each case was evaluated to identify system-related and cognitive factors underlying error using record reviews and, if possible, provider interviews.

**Results:** Ninety cases involved injury, including 33 deaths. The underlying contributions to error fell into 3 natural categories: “no fault,” system-related, and cognitive. Seven cases reflected no-fault errors alone. In the remaining 93 cases, we identified 548 different system-related or cognitive factors (5.9 per case). System-related factors contributed to the diagnostic error in 65% of the cases and cognitive factors in 74%. The most common system-related factors involved problems with policies and procedures, inefficient processes, teamwork, and communication. The most common cognitive problems involved faulty synthesis. Premature closure, i.e., the failure to continue considering reasonable alternatives after an initial diagnosis was reached, was the single most common cause. Other common causes included faulty context generation, misjudging the salience of findings, faulty perception, and errors arising from the use of heuristics. Faulty or inadequate knowledge was uncommon.

**Conclusions:** Diagnostic error is commonly multifactorial in origin, typically involving both system-related and cognitive factors. The results identify the dominant problems that should be targeted for additional research and early reduction; they also further the development of a comprehensive taxonomy for classifying diagnostic errors.

Arch Intern Med. 2005;165:1493-1499

Diagnostic Error

- Lack of Knowledge
- Systems Issues
- Cognitive Factors
We know what we know, we know there are things we do not know, and we know there are things we don’t know we don’t know.

Donald Rumsfeld
Defining and Measuring Diagnostic Uncertainty in Medicine: A Systematic Review

Viraj Bhise, MD, MPH\textsuperscript{1,2}, Suja S. Rajan, PhD\textsuperscript{2}, Dean F. Sittig, PhD\textsuperscript{3,4}, Robert O. Morgan, PhD\textsuperscript{2}, Pooja Chaudhary, MD\textsuperscript{2}, and Hardeep Singh, MD, MPH\textsuperscript{1}

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The **inability** to determine the meaning of illness-related events.

Uncertainty is a dynamic state in which there is a perception of being **unable** to assign probabilities for outcomes that prompts a discomforting, uneasy sensation that may be affected through cognitive, emotive or behavioral reactions or by passage of time and changes in the perceptions of circumstances. The experience of uncertainty is pervasive in human existence and is mediated by feelings of confidence and control that may be highly specific (event-focused) or more global (a worldview).
The **inability** to determine the meaning of illness-related events resulting from ambiguity, complexity, unpredictability of illness, deficiency of information about one’s illness and its consequence.

The subjective perception of **ignorance**.

State of not knowing something **accurately or precisely**, or as a lack of confidence in one’s knowledge of something.

Relative degree of our ability to predict the future. Viewed as a dynamic and variable function of time, capable of stable or erratic variation.
A subjective perception of not knowing what to think or what to do

The confusion, conflict, stuckness, unease and/or discomfort an individual primary care clinician experiences when confronting a predicament in an individual patient who presents a diagnostic dilemma

The subjective perception of an inability to provide an accurate explanation of the patient’s health problem.
How would you define it?

What are these missing?
One Thing’s for Certain:

UNCERTAINTY
The Alluring and Incessant Quashing of Uncertainty
Myths About Knowing

If I just study enough, I’ll know enough.

Experts are experts mostly because they have more knowledge.

I don’t know because I’m a student. And I’m the only one.

Saying “I don’t know” makes me look incompetent.
Article

Patient perspectives on how physicians communicate diagnostic uncertainty: An experimental vignette study†

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The List

BOOM
NAILED IT
I HEAR YOU'RE WRITING A BOOK ON THEOLOGY.

I HOPE YOU HAVE A GOOD TITLE.

I HAVE THE PERFECT TITLE...

"Has It Ever Occurred to You That You Might Be Wrong?"
Patient + Symptom

Provider

Working diagnosis made (Certain enough)

Diagnostic and Treatment Plan

Uncertainty Not Resolvable (Aleatoric Uncertainty)

Relationship Building

Working diagnosis not made (Explicit Uncertainty)

Discussion of Uncertainty

Plan Making

Working diagnosis not made

(Epistemic Uncertainty)
The subjective and often appropriate perception that a clear and accurate explanation of a patient’s health problem is not able to be determined at this time.
boredom is the evidence that we have lost our sense of awe and wonder.
Cannot perform

Perform with help

Perform independently
Original Investigation

Physicians’ Diagnostic Accuracy, Confidence, and Resource Requests
A Vignette Study

Ashley N. D. Moyer, PhD; Velma L. Payne, PhD, MBA; Derek W. Meeks, MD; Radha Rao, MD; Hardeep Singh, MD, MPH
Figure 2. Physicians’ Mean Diagnostic Accuracy and Confidence in That Accuracy as a Function of Diagnostic Phase and Case Difficulty (Easier vs More Difficult)
Decision Making Process

Physician

Re-calibrate

Outcome

Unfavorable Unexpected

Favorable Expected

Unknown

Maintain Calibration

Overconfidence as a Cause of Diagnostic Error in Medicine

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BEING WRONG
ADVENTURES IN THE MARGIN OF ERROR
KATHRYN SCHULZ
Stress From Uncertainty and Resilience Among Depressed and Burned Out Residents: A Cross-Sectional Study

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Table 4: Reluctance to Disclose Uncertainty (PRUS subscale) and correlations with Meslach Burnout (2-item) and Educational Climate Inventory

<table>
<thead>
<tr>
<th></th>
<th>Reluctance to Disclose Uncertainty (n = 49)</th>
<th>Resident Sample (n = 34)</th>
<th>Attending Sample (n = 14)</th>
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<tr>
<td></td>
<td>Correlation Coefficient (r)</td>
<td>p-value</td>
<td>Correlation Coefficient (r)</td>
</tr>
<tr>
<td>Female Gender</td>
<td>-0.22</td>
<td>0.12</td>
<td>-0.05</td>
</tr>
<tr>
<td>Years Since Medical School Graduation</td>
<td>0.40</td>
<td>&lt;0.01*</td>
<td>-0.06</td>
</tr>
<tr>
<td>Meslach Burnout Inventory (2-item)</td>
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<td></td>
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<tr>
<td>Summative Variable</td>
<td>0.30</td>
<td>0.03*</td>
<td>0.12</td>
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<tr>
<td>Educational Climate Index Total Score</td>
<td>-0.33</td>
<td>0.04*</td>
<td>-0.27</td>
</tr>
<tr>
<td>Competitiveness and Stress</td>
<td>-0.44</td>
<td>&lt;0.01*</td>
<td>-0.41</td>
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<tr>
<td>Centrality of Learning</td>
<td>-0.15</td>
<td>0.27</td>
<td>-0.06</td>
</tr>
<tr>
<td>Passive Learning and Memorization</td>
<td>-0.27</td>
<td>0.06</td>
<td>-0.26</td>
</tr>
</tbody>
</table>

*significant at <0.05

PRUS = Physicians' Reaction to Uncertainty Scale
From Tolerating to Embracing…
What do we do?

• Say I don’t know - and try to find out

• Find and share your knowledge gaps

• Share your failures

• Make patients part of your team

• Don’t get caught up in the illusion of certainty.
joy
Thank you!

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