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Diagnostic Errors in (Anatomic) Pathology

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Conflict of Interest Disclosure

I have nothing to disclose that compromises or appears to compromise the integrity of this presentation.

I am on an advisory board for Philips focused on digital pathology.

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Background

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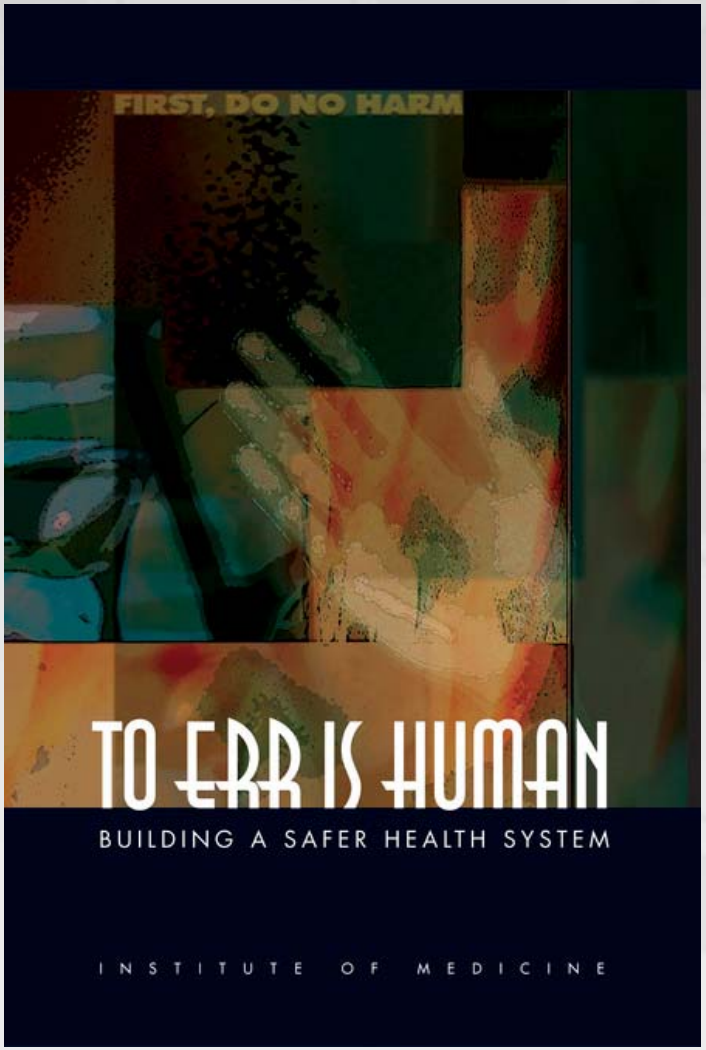
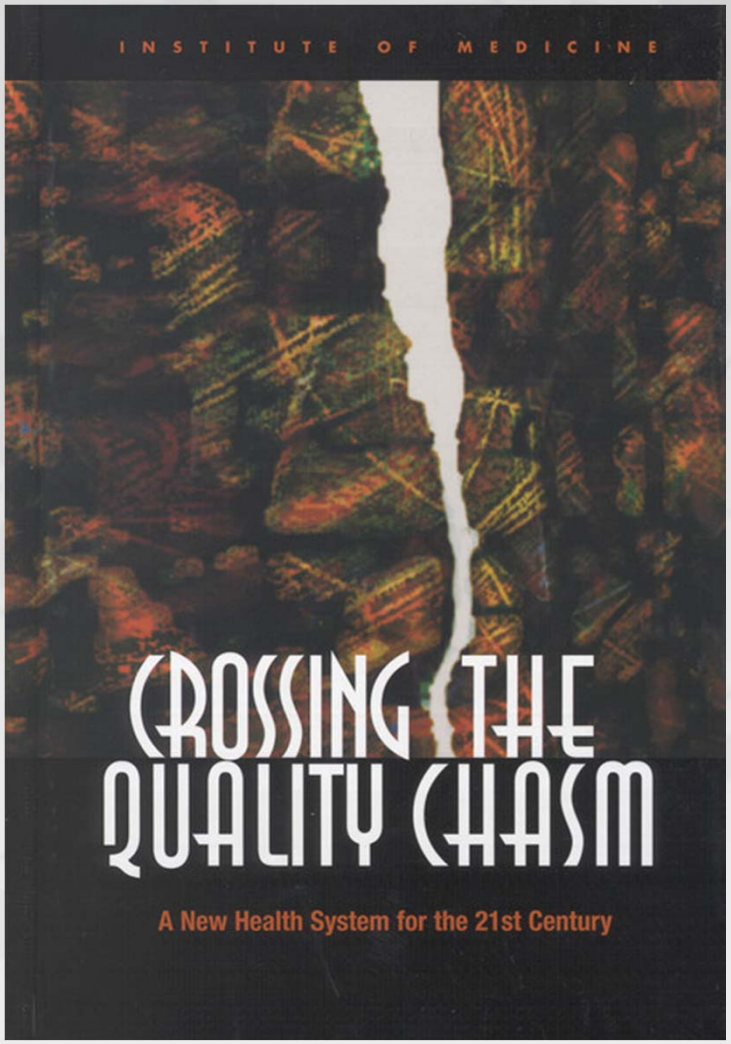
The IOM Quality Series





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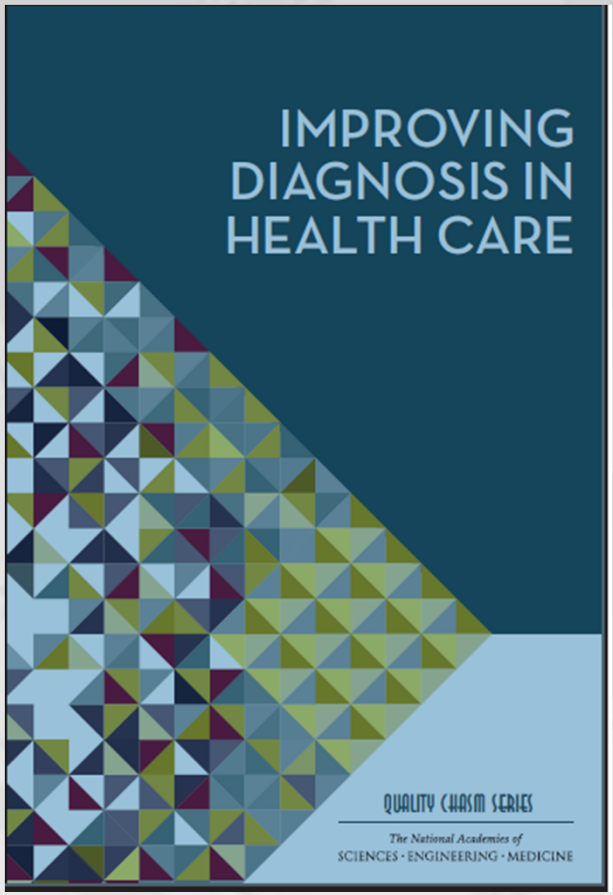

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Key Finding

"It is likely that most of us will experience at least one diagnostic error in our lifetime, sometimes with devastating consequences."

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Medical error—the third leading cause of death in the US

BMJ 2016; 353 doi: http://dx.doi.org/10.1136/bmj.i2139 (Published 03 May 2016) Cite this as: BMJ 2016;353:i2139

IOM Definition of Diagnostic Error

The failure to:

(a) establish an **accurate** and **timely** explanation of the patient's health problem(s)

or

(b) **communicate** that explanation to the patient

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IOM Report
Pathology Focus

-Part of the Committee's definition is reporting of the result **to the patient**…pathologists play a crucial role in timely reporting of results…**to the patient**

-Implementation of process improvement efforts across the **entire patient experience** (not just within the lab)

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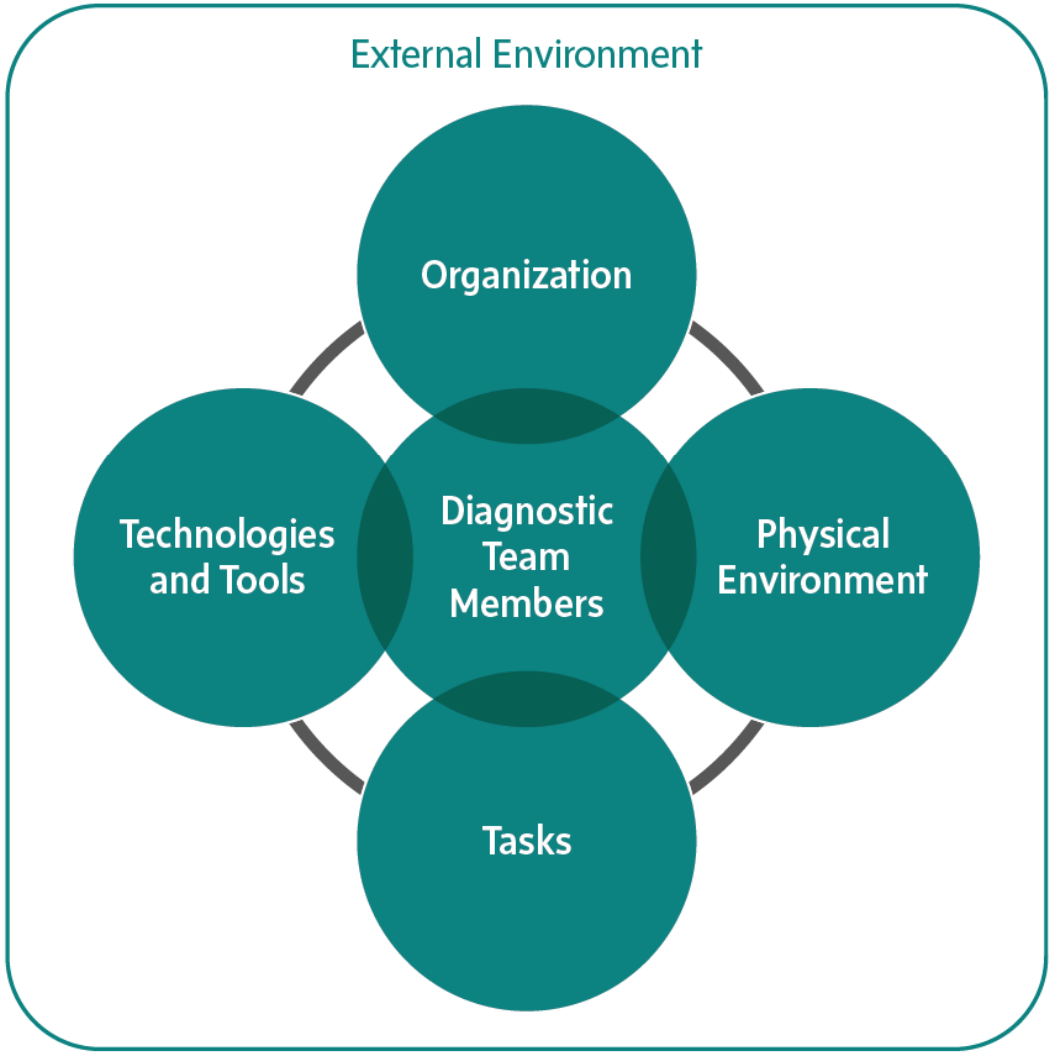
Key Report Themes

- Diagnostic errors are a **significant** and **underappreciated** health care quality challenge
- **Patients** are **central** to the solution—It's about the patient
- Diagnosis is a **collaborative** effort—a "team sport"

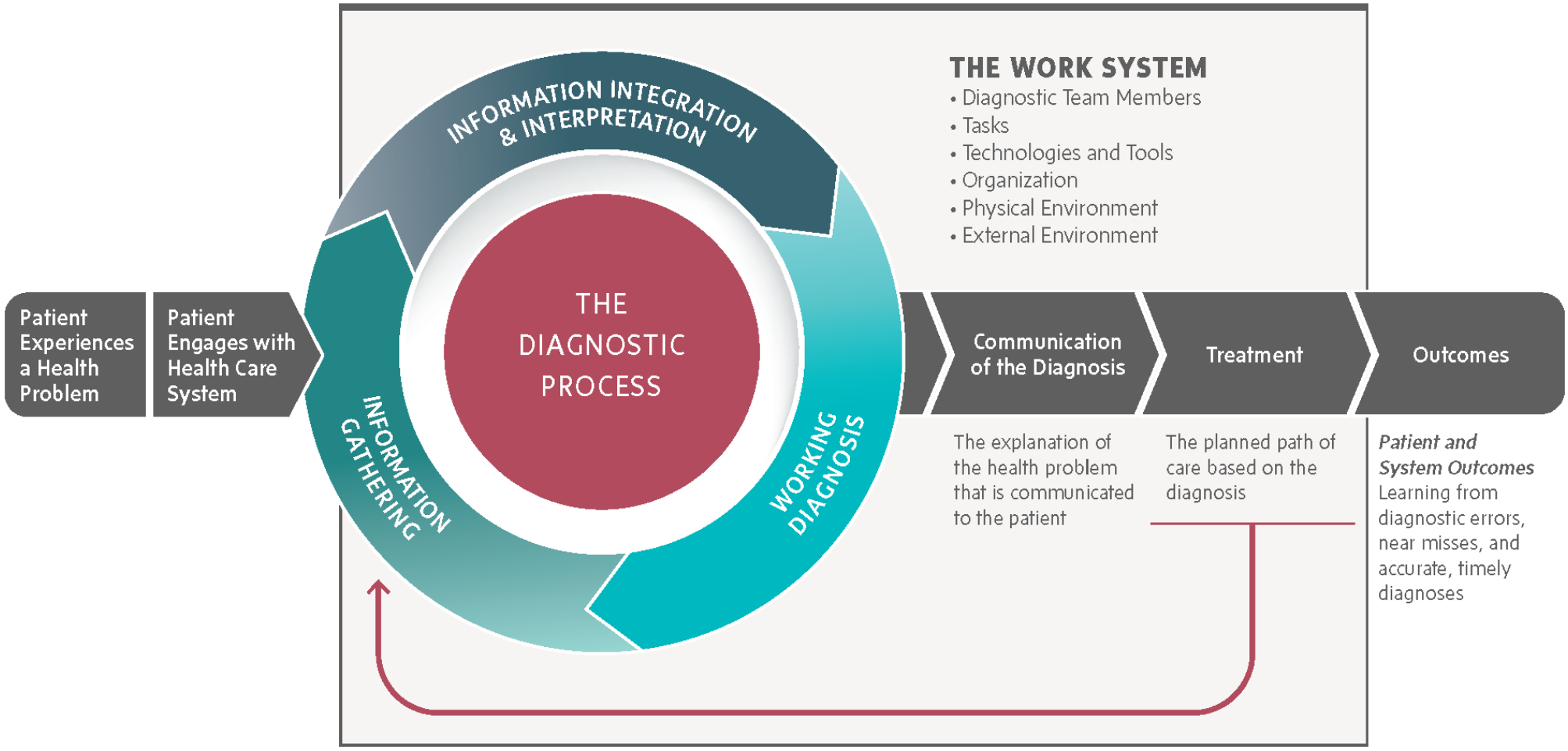
Diagnostic Team Members

The Work System



Where Failures in the Diagnostic Process Occur

- Failure of Engagement
- Failure in Information Gathering
- Failure in Information Integration
- Failure in Information Interpretation
- Failure to Establish an Explanation for the Health Problem
- Failure to Communicate the Explanation



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IOM Report Pathology Focus--

- No significant adverse information related to the practice of pathology/laboratory medicine.
- Pathologists are key member of the health care team!
- This is an opportunity…

"It's Our Turn. Implications for Pathology form the Institute of Medicine's Report on Diagnostic Error (Laposata & Cohen); Arch Pathol Lab Med 2016; 140: 505-7.

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Cognitive Aspects of Diagnostic Errors

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Arrogance

Guru (Expert) Pathology

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"There are no borderline lesions, only borderline pathologists"

Pathology Favorites

Food: waffle

Plant: hedge

Car: Dodge

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Dreyfus Model of Skill Acquisition

	Knowledge	Autonomy	Coping with Complexity	Perception of context
Novice	textbook	Needs close supervision	Little or no	Tends to see actions in isolation
Advanced Beginner	Working, of key aspects	Straightforward tasks likely to be completed to an acceptable standard	Appreciates complex situations with only partial resolution	Sees actions as a series of steps
Competent	Good working & background	Fit for purpose	Copes with complex through deliberate analysis	Sees actions partly in terms of long-term goals
Proficient	Depth of understanding of discipline	Fully acceptable standard achieved routinely	Deals with complex holistically	Sees 'big' picture & how individual actions fit in
Expert	Authoritative and deep tacit understanding	Take responsibility for going beyond existing standards and creating own interpretations	Holistic grasp of complex situations with analytical & intuitive ease	Sees 'big' picture and alternative

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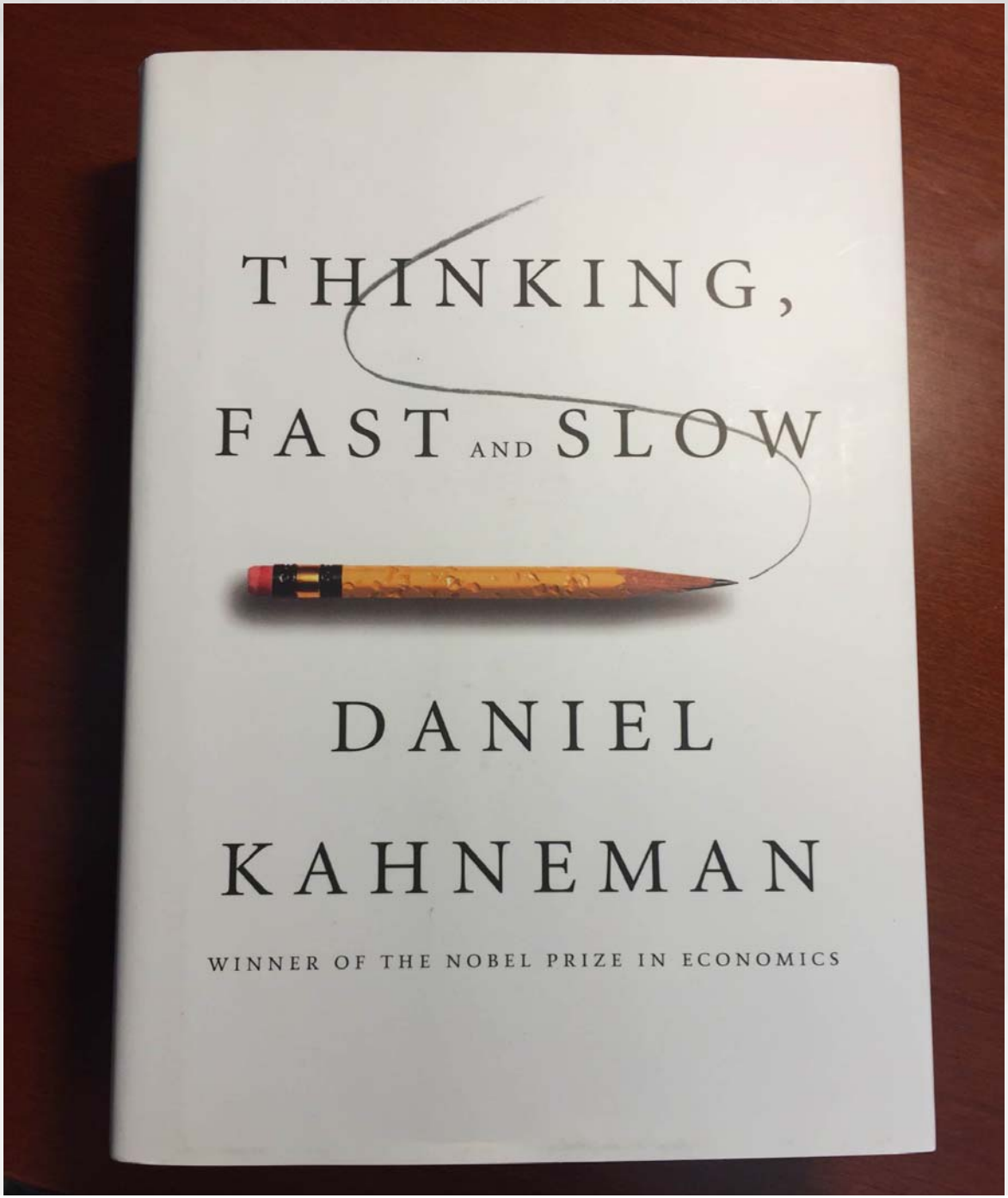

Decision Making

System 1: Fast, automatic, frequent, emotional, stereotypic, subconscious

System 2: Slow, effortful, infrequent, logical, calculating, conscious

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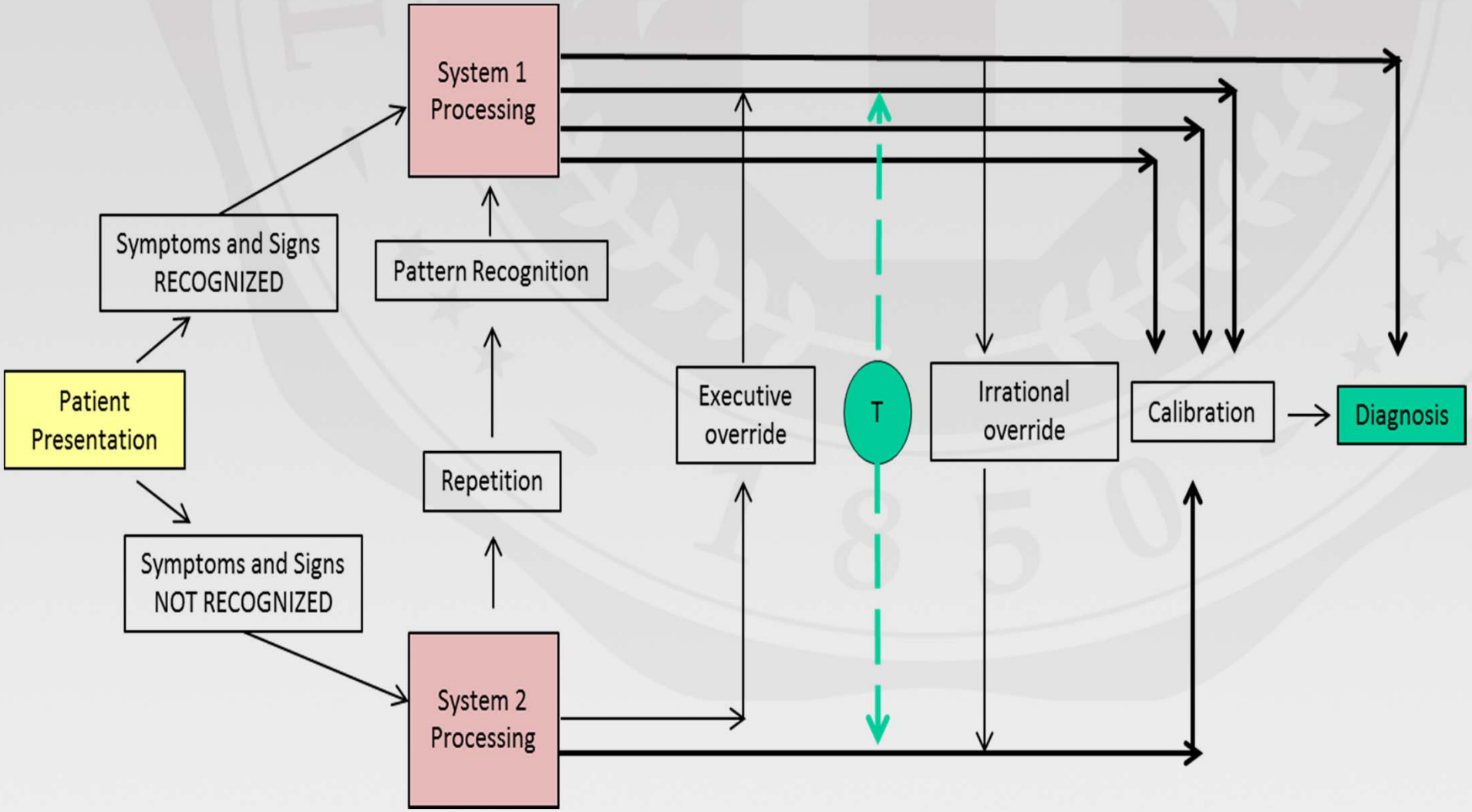
Dual Process Theory and Diagnosis



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Some Cognitive Biases

Anchoring Bias: Over-reliant on the first piece(s) of information

Blind-spot bias: Failing to recognize your own cognitive biases is a bias in itself

Confirmation bias: tendency to search for or interpret information in a way that confirms one's preconceptions

Framing: Using a too-narrow approach and description

Overconfidence: Too confident about our abilities

Salience: Tendency to focus on the most easily recognizable features

Zero-risk Bias: Love certainty…even if it's counterproductive

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Cognitive Bias Cheat Sheet

- **Too much information** (e.g. attention bias, anchoring, confirmation bias, naïve realism)
- **Not enough meaning** (e.g. neglect of probability, attribution error, halo effect, Murphy's Law, spotlight effect, hindsight bias)
- **Need to act fast** (e.g. overconfidence effect, sunk cost fallacy, status quo bias, ambiguity bias)
- **What should we remember** (e.g. suggestibility, stereotypical bias, duration neglect, next-on-line effect)

Buster Benson; ***Cognitive Bias Cheat Sheet***: https://betterhumans.coach.me/cognitive-bias-cheat-sheet-55a472476b18#.pi87tu71m

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Rhabdomyosarcoma presenting as a parotid gland mass in pediatric patients: fine-needle aspiration biopsy findings.

Salomão DR, Sigman JD, Greenebaum E, Cohen MB.

Cancer. 1998 Aug 25;84(4):245-51.

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Occam's Razor: "entities must not be multiplied beyond necessity"

Hickam's Dictum: "patients can have as many diseases as they damn well please"

Crabtree's Bludgeon: "no set of mutually inconsistent observations can exist for which some human intellect cannot conceive a coherent explanation, however complicated"
(BMJ 343:1301, 2011)

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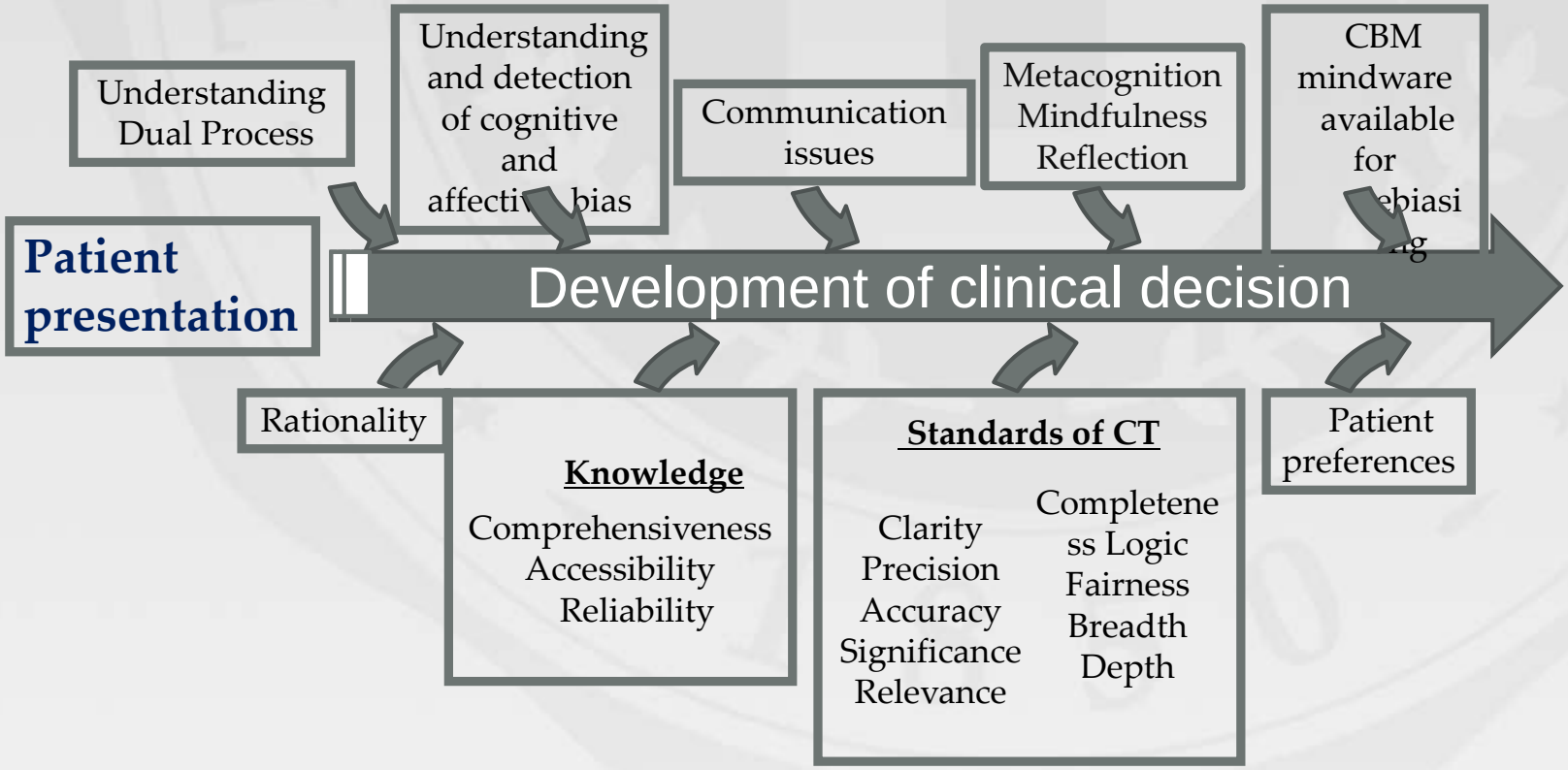
Dalhousie model of cognitive processes and clinical decision making



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Back to AP

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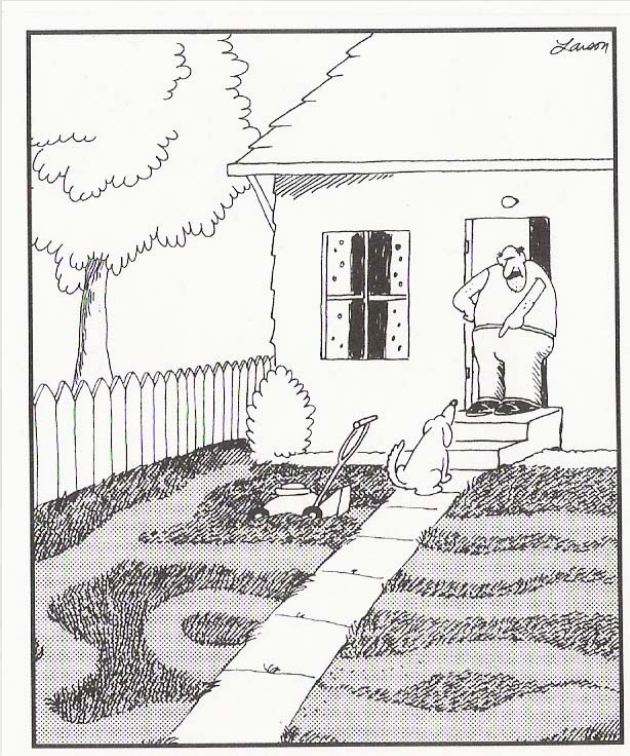
Approach to Error in AP

- Historically, focus has been on individual performance rather than system design

- Admonishment doesn't have proven long term impact on quality/safety



"You call that mowin' the lawn? ... Bad dog! ... No biscuit! ... Bad dog!"

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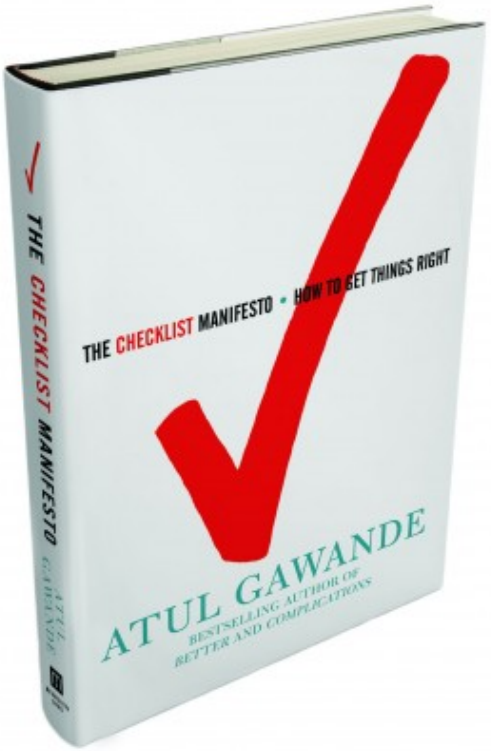
Culture of Error Prevention

- **Old way**
  - Expert (audacity) will save us from ourselves
    - Striking oil
- **New way**
  - Good standard operating procedures
    - Value investing



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Measure: Use LeTCI (from Baldrige Framework)

Levels: your current level of performance

Trends: your rate of performance improvement or sustainability of good performance

Comparisons: your performance relative to appropriate benchmarks

Integration: extent to which results match action plan performance requirements

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Differential Diagnoses

Congenital
Genetic
Environmental
Mechanical
Metabolic
Infectious
Immunologic
Neoplastic
Iatrogenic
Psychological
Idiopathic

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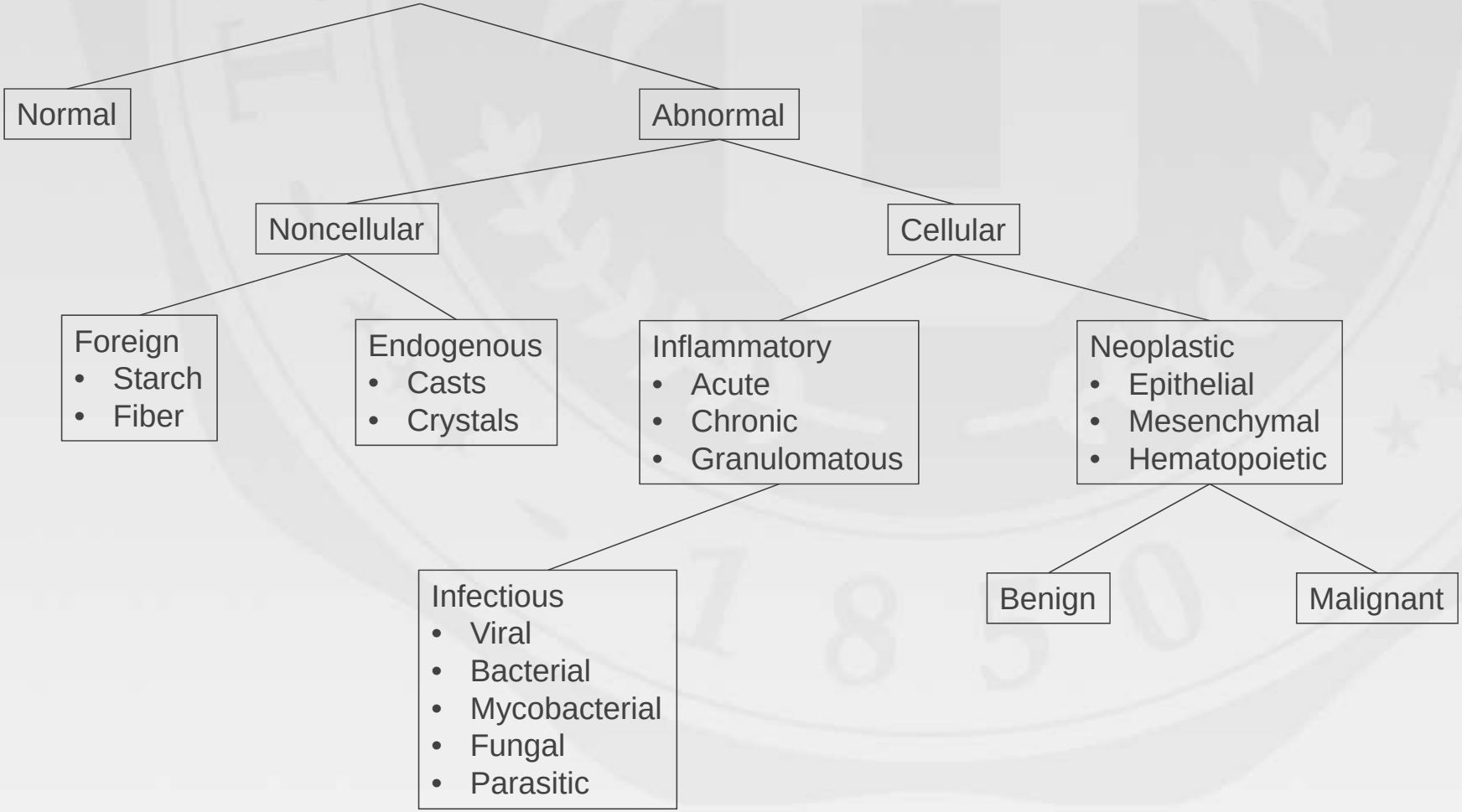
General Algorithmic Approach to the Morphologic Evaluation of Body Fluids



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Elements of the Culture of Safety

- Recognize the inherent risk in every medical intervention (diagnostic opportunity)
- Every patient, every time, every … ***eliminate nonchalance*** in routine work
- "Bullet in the breast pocket"

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"You can observe a lot just by watching."

Yogi Berra

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Become a Process Scholar

- 4000 ppm (0.4%) defect rate for laboratory QI monitors
  - *– Same as airline baggage handlers*

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What can we learn from the airline industry?

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Pathologist Opportunity to Impact Patient Safety: Communicate Effectively

Doctor - doctor communication

- Pay attention to report format
- When to pick up the phone and call ordering physician?
- Anatomic Path "critical values"--ADASP recommendations

Doctor - patient communication

- Pay attention to report format
- Pathologists communicating directly with patients regarding their results
- Remember we are physicians first

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About Systems

"A bad system will beat a good person every time"
Edward Demming

"Every system is perfectly designed to achieve exactly the result is gets"
Don Berwick

"A common mistake that people make when trying to design something completely foolproof is to underestimate the ingenuity of complete fools"
Douglas Adams

Last Observation

In the final analysis, these comments are a plea to think about how you think (meta-cognition) and arrive at diagnoses (meta-diagnosis), paying particular attention to how we develop mastery and the cognitive biases we must recognize.

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Pathology Redux?

"As is our pathology so is our practice...what the pathologist thinks today, the physician does tomorrow."

Sir William Osler, M.D. (1849-1919)