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Clinical Decision Making

Primary Care Paramedicine

Module: 09

Section: 04a

Lecture Outline

- Introduction
- How we think: the dual processing theory
- Decision making strategies
- Critical decision making process
- Critical thinking in action

Critical Decision Making

INTRODUCTION

Introduction

- 21st Century Paramedics are prehospital practitioners of emergency medicine and not field technicians.
- Paramedics are required to make decisions every day:
  - Assessment
  - Treatment
  - Transport
- Some decisions can impact patient care and outcomes

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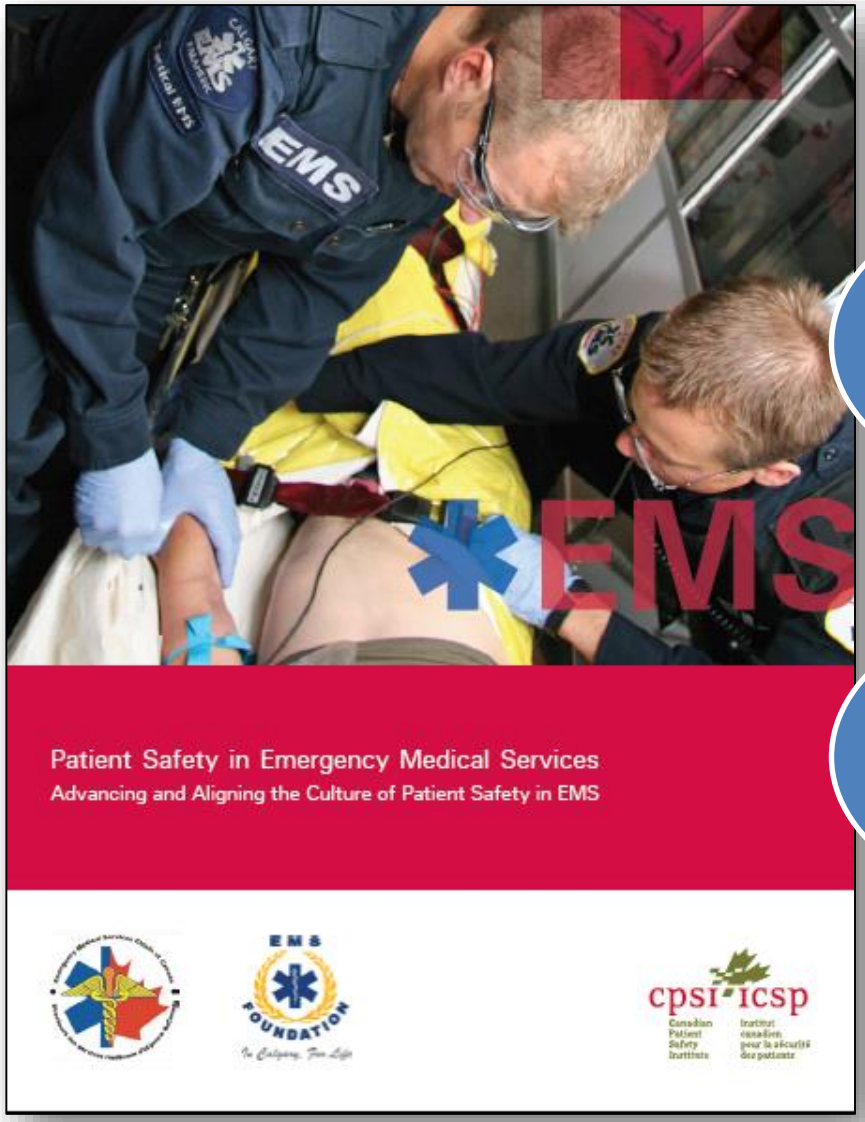
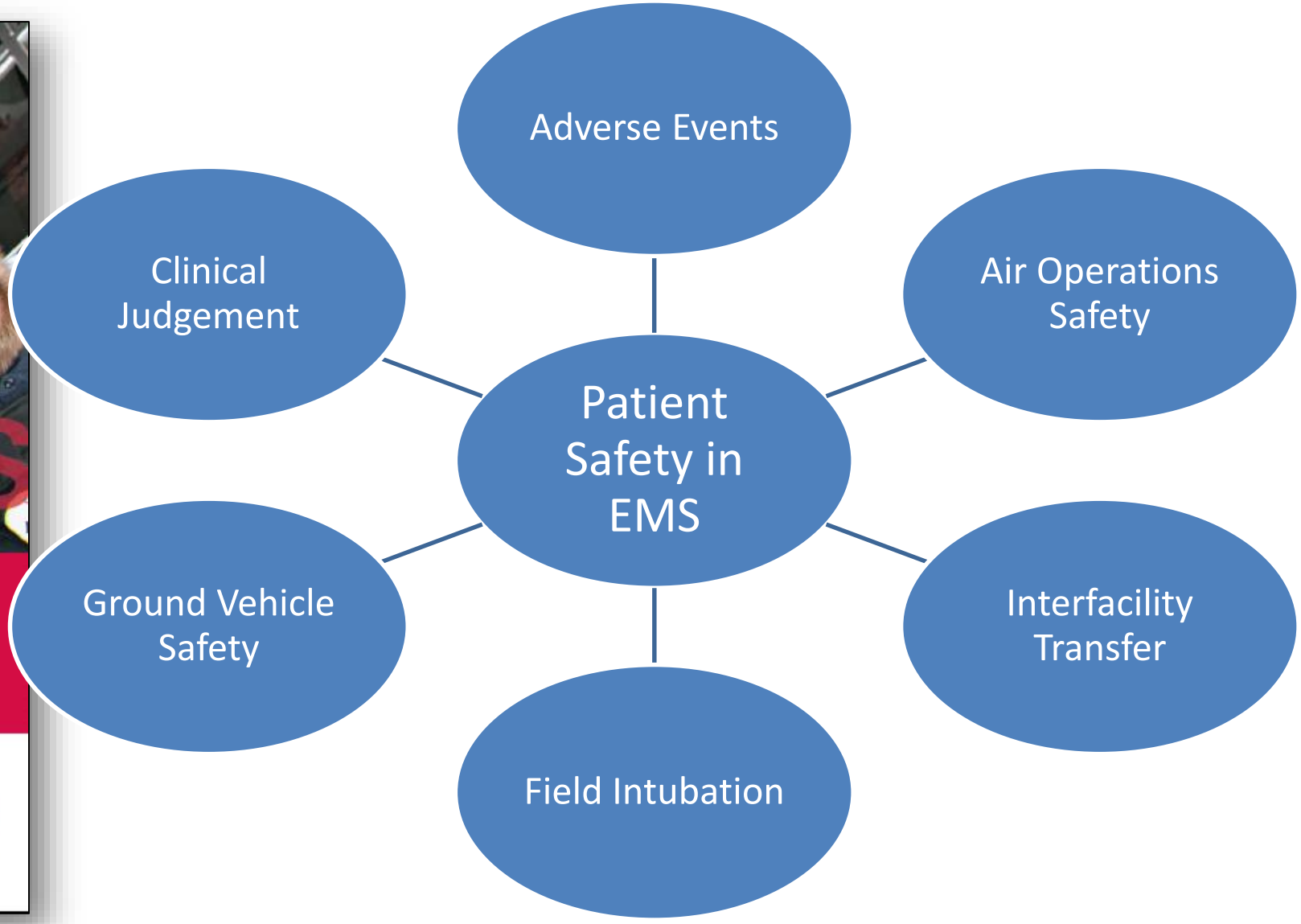
Patient Safety in Emergency Medical Services





Key Concepts

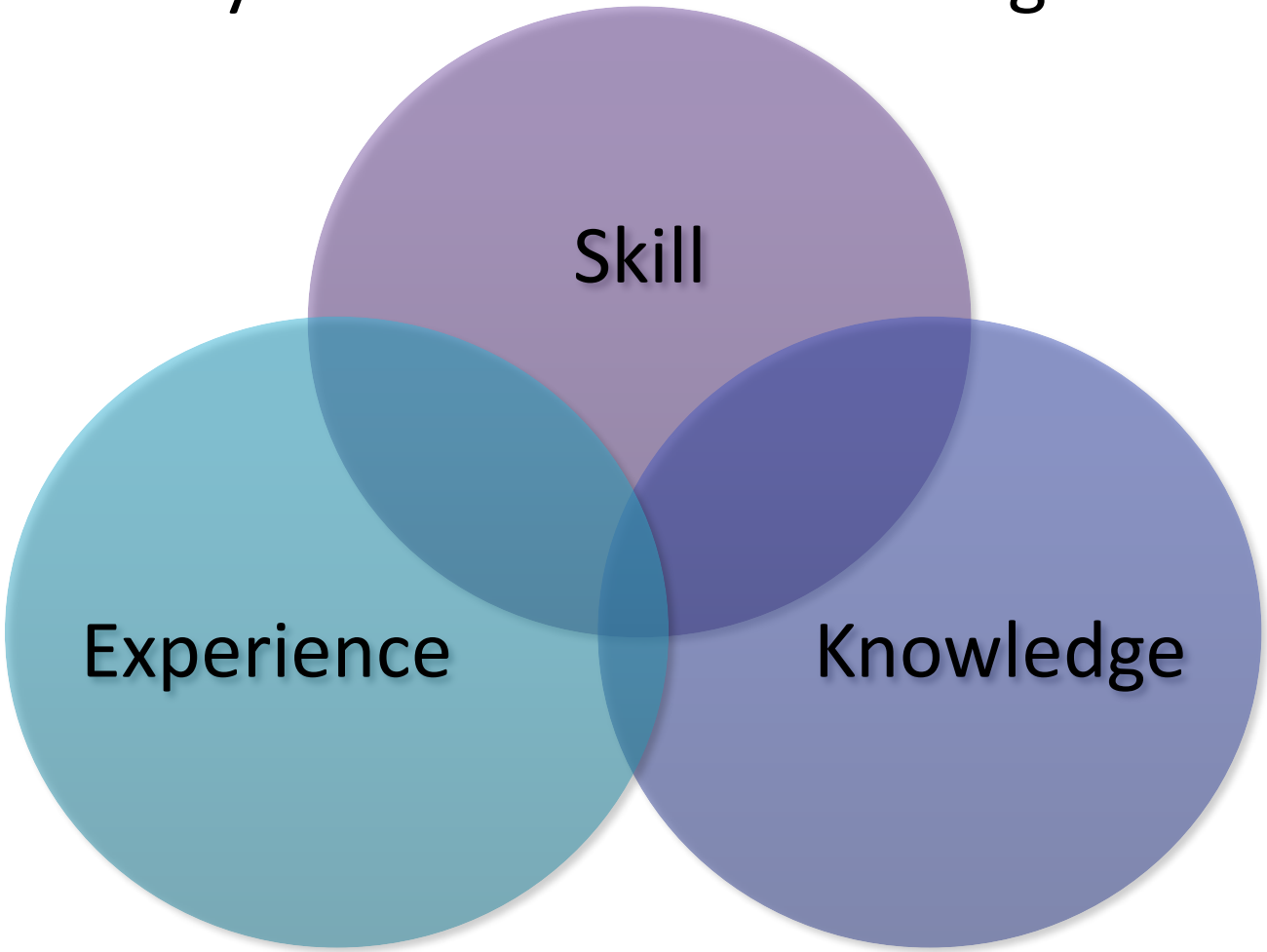
- Critical thinking
- Clinical decision making
- Evidence based medicine/practice
- Meta-cognition

Clinical Reasoning

- Process by which the information is extracted from the history and physical examination
  - Not “intuitive”
- Merges with clinical knowledge, experience, and the current best evidence to formulate the next steps in patient care
  - Development of the diagnostic and management plans
- Critical reflection involves thinking through the reasoning for these decisions

Clinical Reasoning

- “the cognitive process necessary to evaluate and manage a medical problem”



Critical Thinking

- Critical thinking integrates knowledge & skills to analyze data and critically appraise information

  Profetto-McGarth 2005

- “People who think critically consistently attempt to live rationally, reasonably, empathically. They are keenly aware of the inherently flawed nature of human thinking when left unchecked.”

  Linda Elder, 2007

- Critical thinking requires one to be skeptical

Clinical Decision Making

- Clinical decision making is a contextual, continuous, and evolving process, where data are gathered, interpreted, and evaluated in order to select an evidence-based choice of action

  Tiffen (2014). J Prof Nurs.

- Clinical decision making is the application of critical thinking to clinical care; how the data / information gathered is applied to delivering care

Making Clinical Decisions?

- Paramedics gather information in many ways:
  - Subconscious observation
  - Scene survey
  - Primary survey
  - Interview/history taking
  - Physical exam
  - Assessment tools
  - Reassessment after interventions
- Clinical decision making involves continuous thinking and re-evaluation of all information

Clinical Decisions

- How do we make sure we make the right clinical decisions?
- We need to understand how we think and what affects our thinking
- Otherwise our decision making skills are unlikely to improve
- Same as any other skill

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Clinical Decision Making

HOW WE THINK:
THE DUAL PROCESSING THEORY

Dual Processing Theory

- This theory describes how humans process information and make decisions
- Human brains use two separate but related processes
  - System 1: Intuition
  - System 2: Rational thought
- Effective thinkers can monitor the system they are using to make decisions and toggle back and forth

Dual Processing Theory

System 1: Intuition/Experiential	System 2: Rational
Fast	Slow
Unconscious Effortless – takes no energy Automatic	Deliberate and conscious Effortful – takes energy Controlled mental process
Without self-awareness or control	With self-awareness or control
Impressions Intuitions Feelings	Logic Analysis Reflection
Can perform while tired, sick or stressed	Impaired by fatigue, illness or stress
Performs familiar or practiced routines	Necessary for novel decisions or routines
Error prone	Reliable, can override errors through careful thought

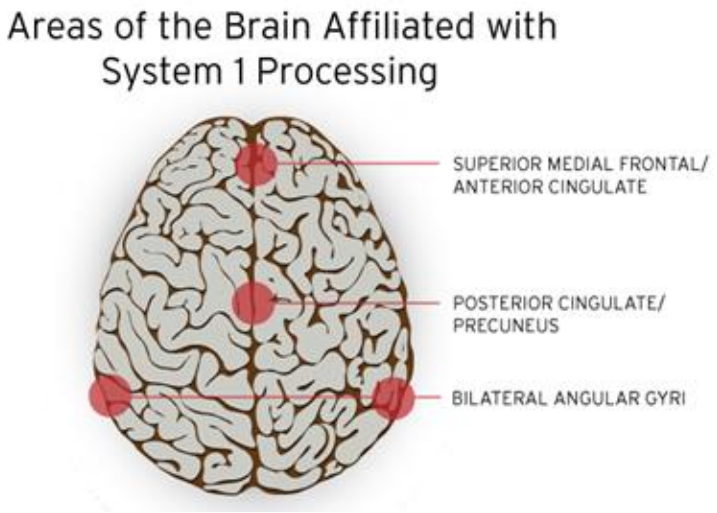
Dual Processing Theory

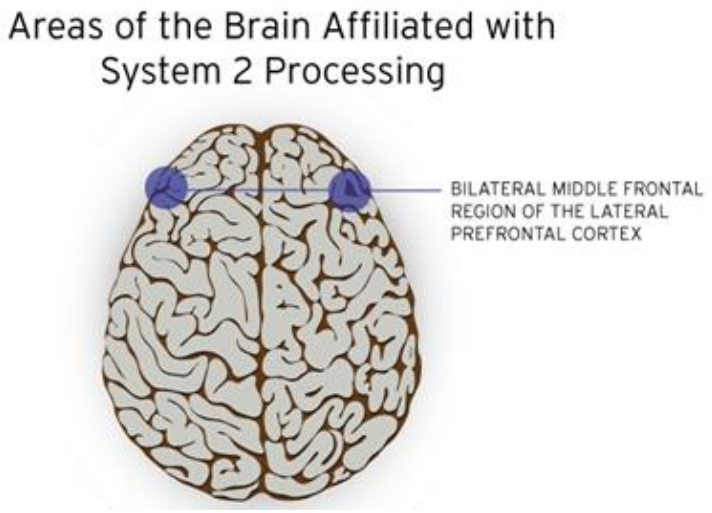
SYSTEM 1

- Faster
- Reactive
- Emotional
- Instinctive

SYSTEM 2

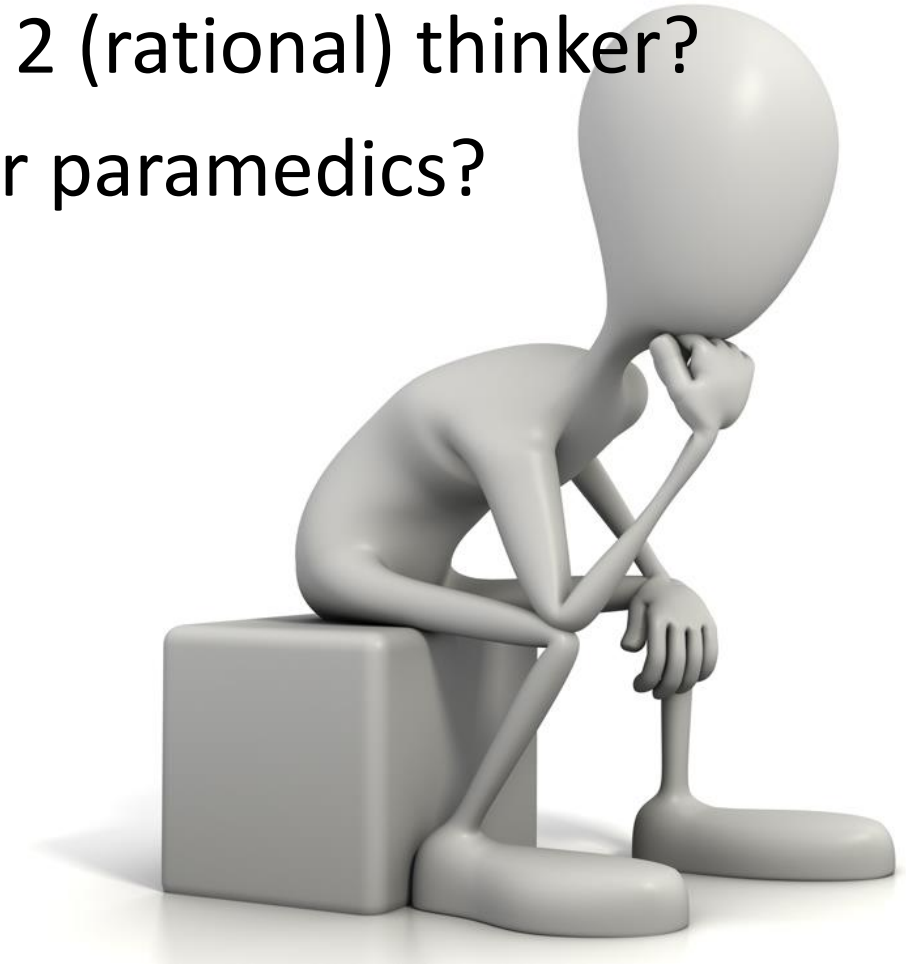
- Slower
- Deliberate
- Logical
- Reflective





What System Do I Use More Often?

- Consider your own decision making
- Are you a system 1 (intuitive) or system 2 (rational) thinker?
- Which do you think is more common for paramedics?
  - Paramedics more likely to use and prefer rational thinking over intuitive thinking
  - Especially older, more experienced and higher trained paramedics



Meta-Cognition

- Thinking about one's thinking
  - Learning how to learn
- Being aware of your thought process
- How did I come to that decision?
  - Before - Preparing before decisions
  - During - The decision-making process
  - After - Reflecting after decisions

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Clinical Decision Making

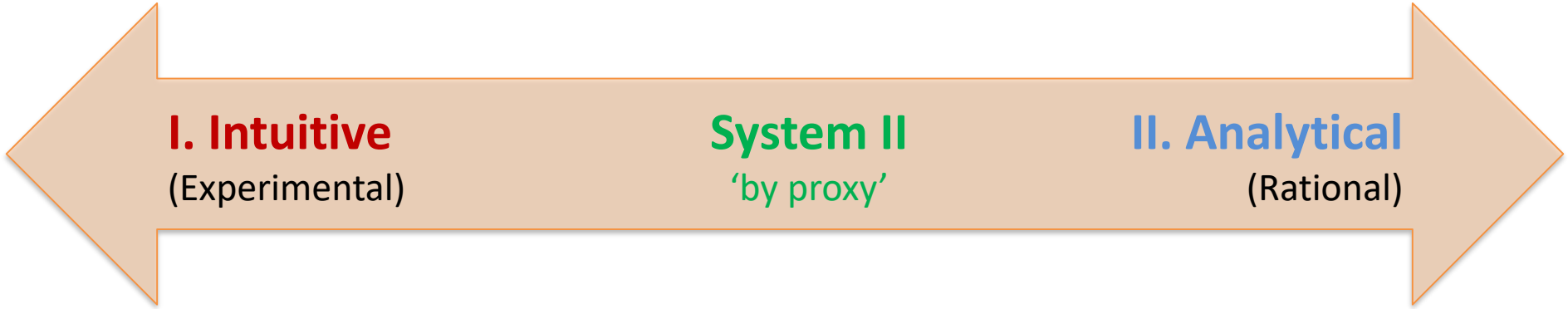
THINKING STRATEGIES

Thinking Strategies

- There are several thinking strategies for how clinicians make decisions
  - Six key thinking strategies:
    - Exhaustive
    - Algorithmic
    - Rule out the worse case scenario (ROWS)
    - Event driven
    - Pattern recognition
    - Intuition

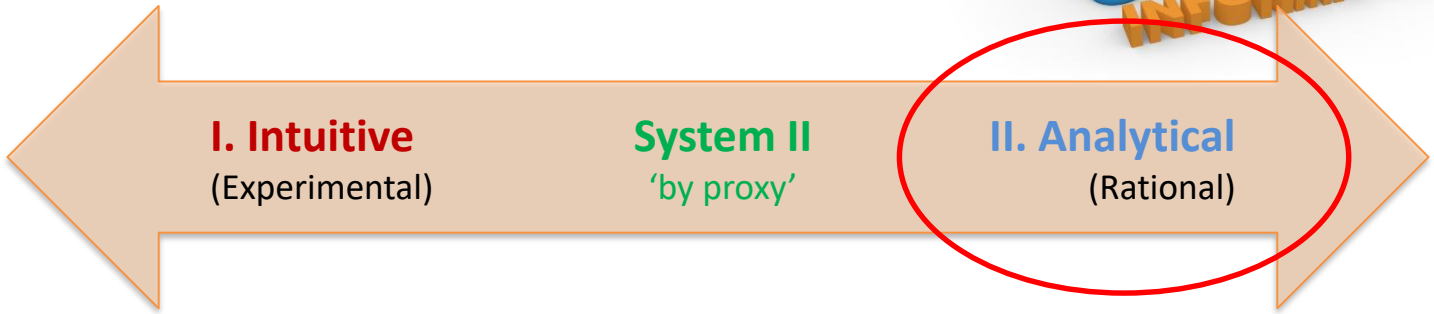
Thinking Strategies and Dual Processing Theory

- Each strategy relies mainly on one of the systems:
  - System I (intuition),
  - System II (analytical thought), or
  - 'System II by proxy'
    - Analytical thought (System 2) used to develop decision tool, rule or algorithm, which clinicians memorize and can apply rapidly (System 1)



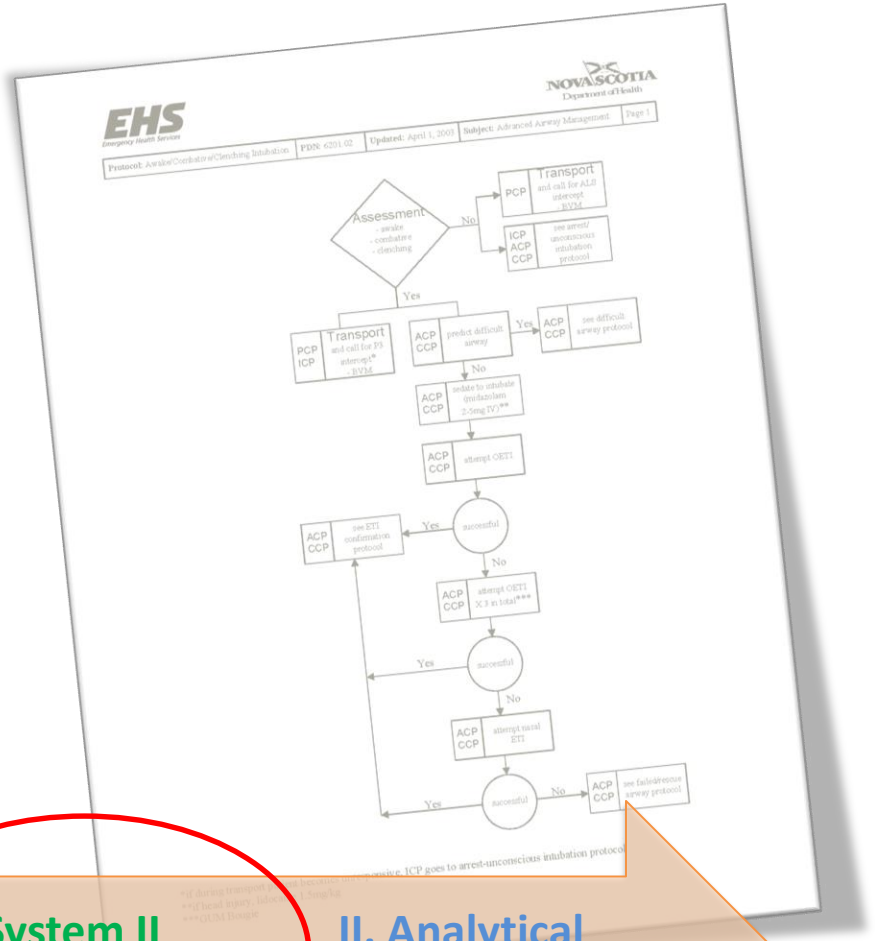
Exhaustive Thinking Strategy

- Accumulate as many facts/info as possible, and then sift through for most likely diagnosis
- Example:
  - Undifferentiated GI pain in 68 y/o male, paramedic is unsure what it could be
- Pros?
- Cons?
- Which system?



Algorithmic/Protocol Driven

- Preset diagnostic or therapeutic pathway based on pre-established criteria.
- Commonly used in paramedic practice
- Pros?
- Cons?
- Which system?



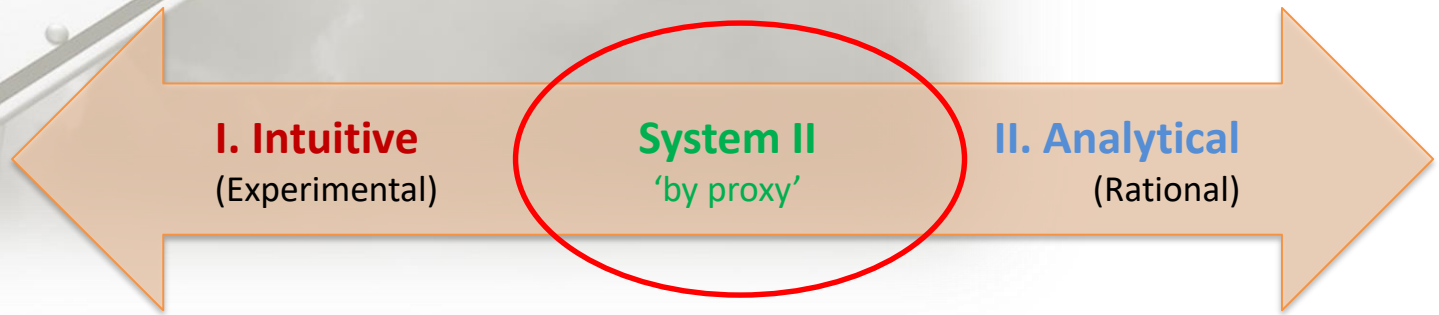
I. Intuitive
(Experimental)

System II
'by proxy'

II. Analytical
(Rational)

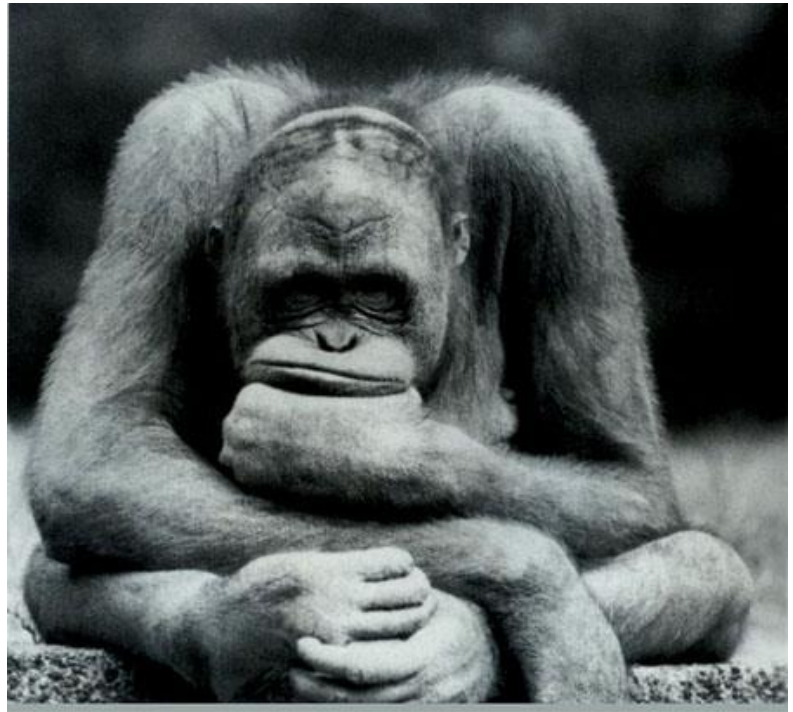
Rule Out the Worst Case Scenario

- Have a list of “can’t miss” diagnoses for each complaint
- Pros?
- Cons?
- Which system?



Event Driven

- Reaction to what requires immediate intervention
- Pros?
- Cons?
- Which system



I. Intuitive
(Experimental)

System II
'by proxy'

II. Analytical
(Rational)

Pattern Recognition

- Identify key features of a diagnosis, base treatment plan on this
- Pros?
- Cons?
- Which system?

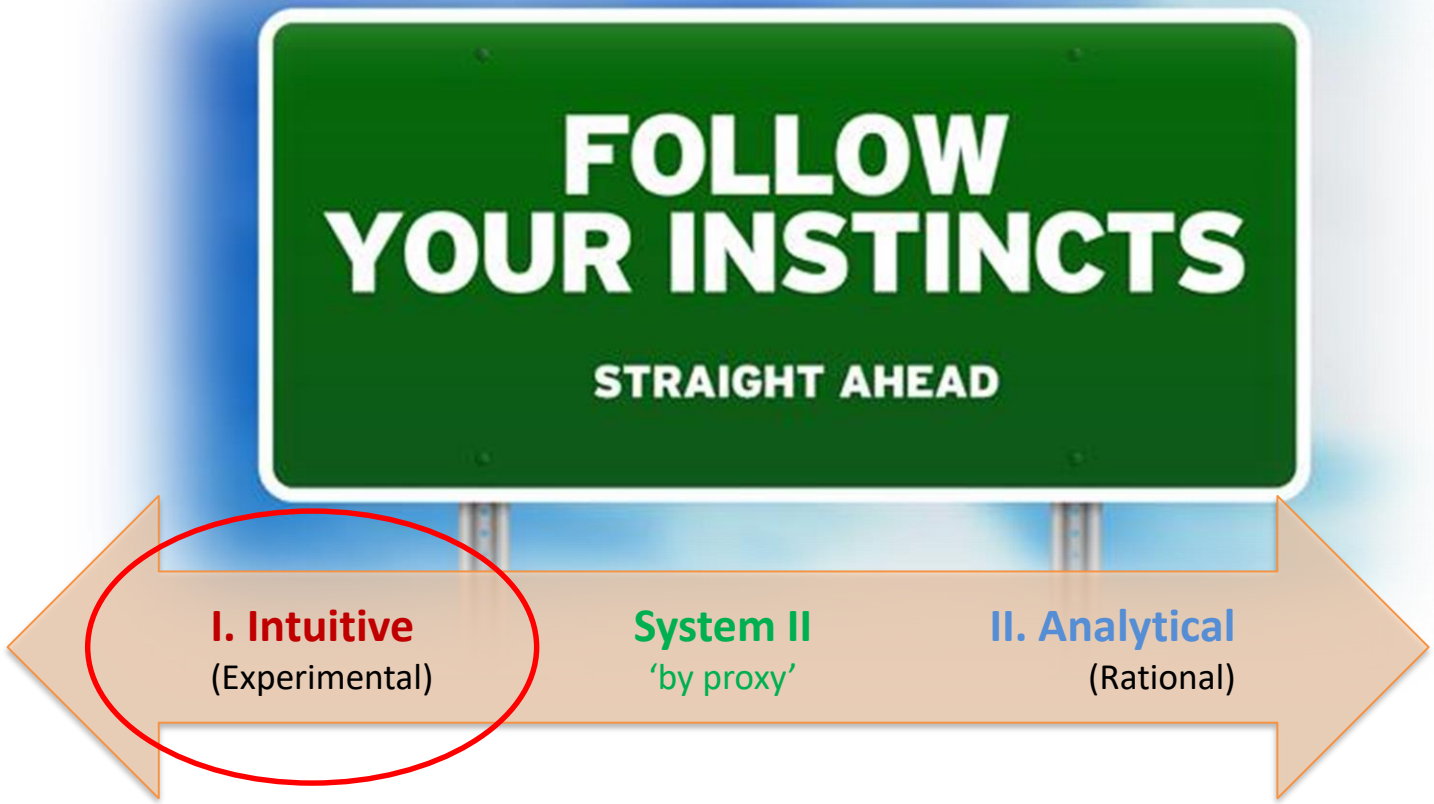
I. Intuitive
(Experimental)

System II
'by proxy'

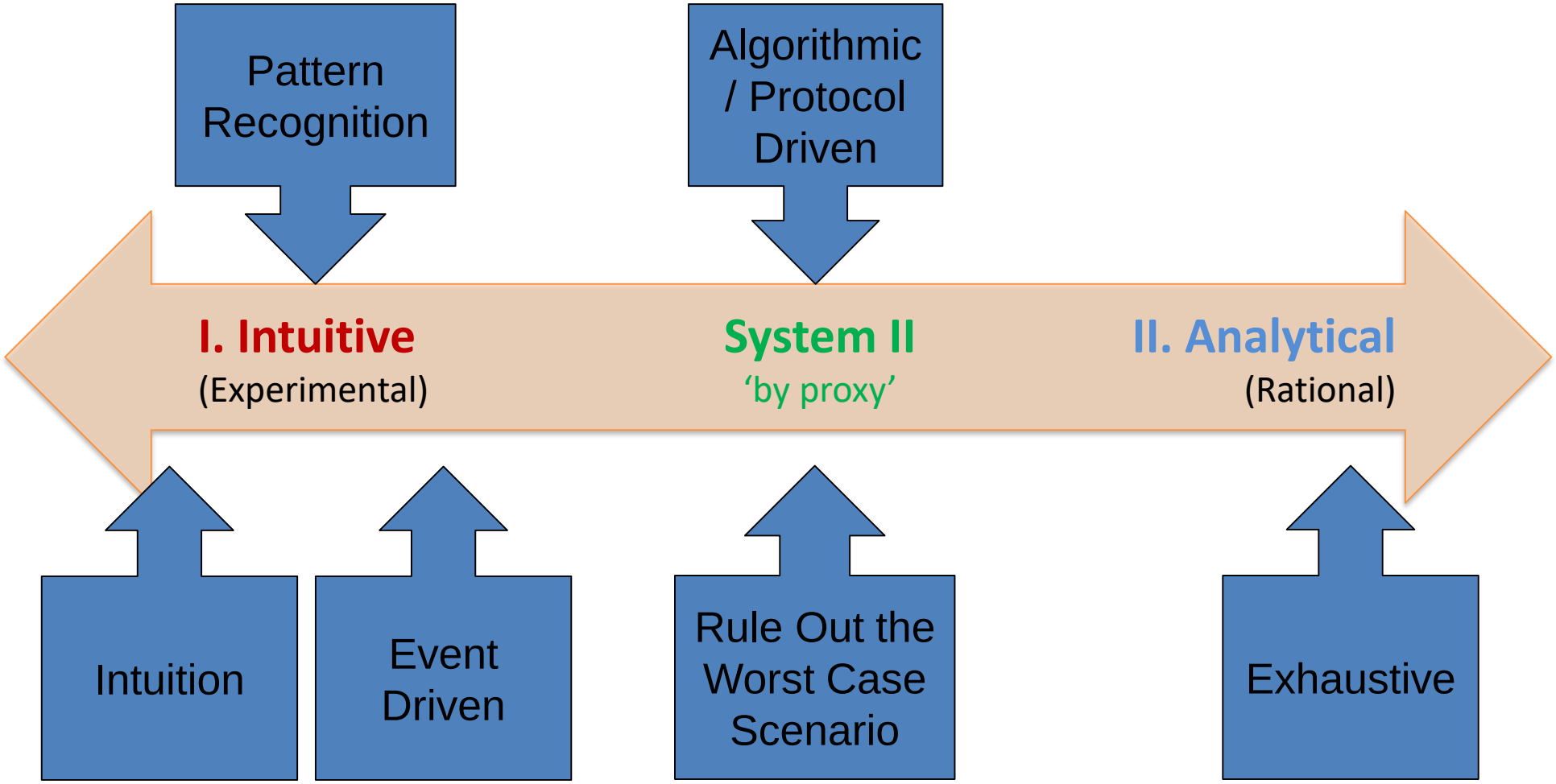
II. Analytical
(Rational)

Intuition

- Decisions made without conscious thought
- Pros?
- Cons?
- Which system?



The Spectrum of Thinking Strategies



Paramedic Decision Making

- There are many times during a call in which paramedics need to make decisions
  - Assessment
  - Treatment
  - Transport
- Each decision may use a different thinking strategy
- Use System 2 thinking to check to make sure your System 1 decisions are reasonable

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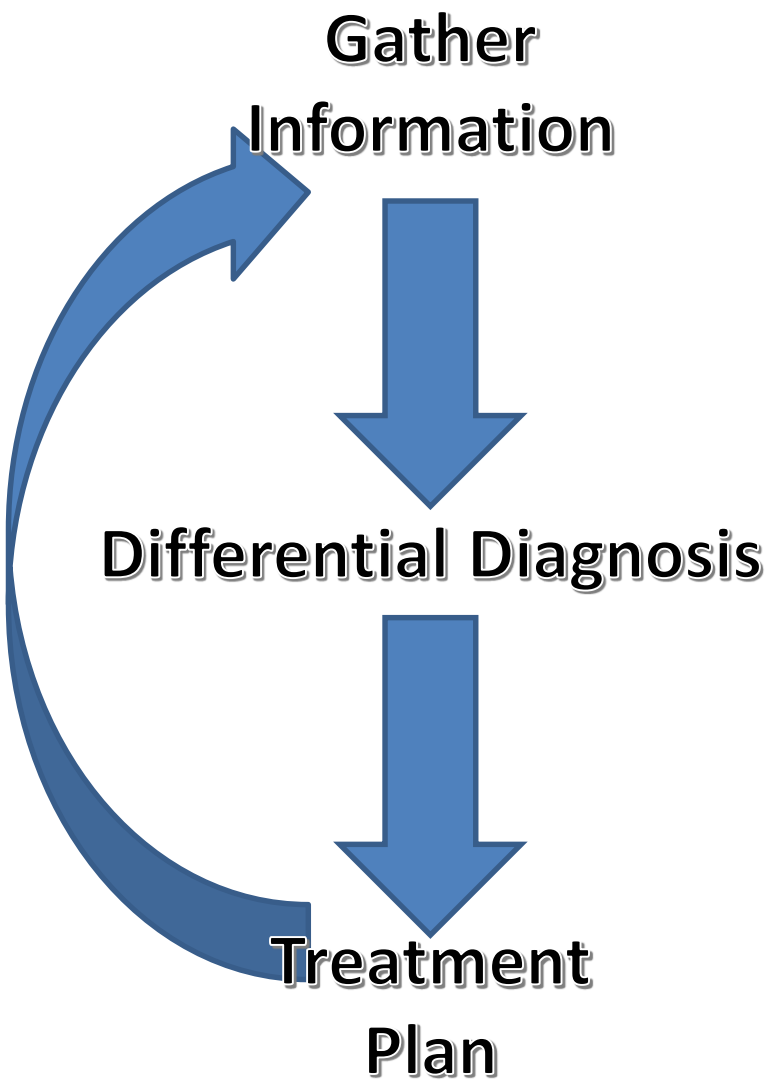
Clinical Decision Making

PARAMEDIC CRITICAL THINKING: PUTTING IT INTO ACTION

Aspects of Clinical Decision Making

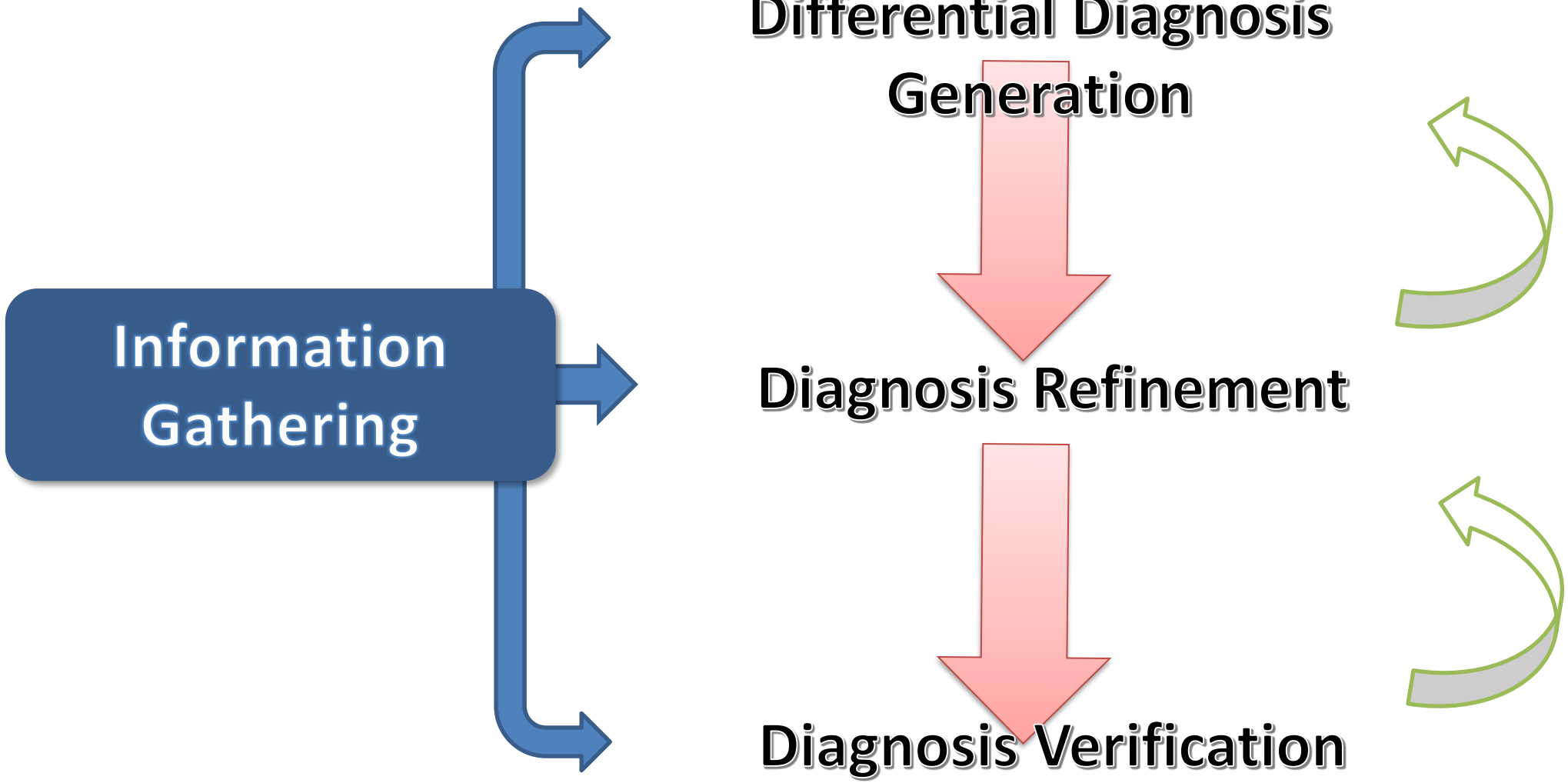
- What you need to be a great paramedic clinical decision maker
  - Solid understanding of anatomy, physiology and pathophysiology
  - Practice gathering large amounts of information in an organized manner
    - Differentiating between relevant and irrelevant data
  - Identifying and dealing with medical ambiguity
    - Clinical uncertainty
  - Making a decision and following actions
  - Later, be able to explain the decisions, including:
    - What data was used to inform it and
    - What thinking strategy was used

Developing a Treatment Plan



- Paramedics must
  - Gather, evaluate, and synthesize much information in very little time.
  - Develop an initial diagnosis
    - Evaluation of the patient's condition and its causes
  - Develop and implement a treatment plan
    - Alter it if need be, based on continuously gathering information

Information Gathering



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Clinical Decision Making

STEPS IN CRITICAL THINKING

Assessment, Judgment, and Evidence

- Bringing the decision making, clinical experience, and knowledge of the patient together with the current best evidence regarding the issues involved
  - Assess information
  - Assign priorities
  - Form clinical opinion
  - Integrate patient and professional preferences
  - Further assess

Differential Diagnosis

- Initial patient presentation and complaints will allow you to form a differential diagnosis
  - The list of probable causes of your patient's symptoms
- Further history and assessment will allow you to narrow your diagnosis to a most probable cause
- Allows for a "Rule in/Rule out" approach

Diagnosis Identification

- A diagnosis (chief complaint) may be defined as anything that will need further evaluation and/or attention and what the patient is telling you.
- It may be related to one or more of the following:
  - An uncertain diagnosis
  - New symptoms or physical examination findings related to a previous diagnosis
  - New symptoms or findings of unknown etiology
  - Unusual findings revealed in the clinical examination
  - Personal or social difficulties

Diagnosis Identification

- Formulate problems as specifically as possible
- The diagnosis list is key to developing a complete understanding of a patient's concern
- This includes using your differentials to help rule in and rule out condition

Diagnosis Identification

- Review the list and note any thing missing that you might expect in support of your hypotheses
  - Beware of “red herrings,” the bits of information that are distracting and draw your thinking away from central issues
- Critically evaluate unexpected or unusual findings, but do not let them distort full consideration of all you have learned

Diagnosis Identification

- After a matching data (both subjective and objective) with possible diagnosis
  - Consider the appropriate assessments and diagnostics to confirm the diagnosis and/or rule out other possibilities
  - Specialty consultation may be needed before establishing the diagnosis (OLMC, etc)

Valid Hypotheses

- Critical thinking allows you to consider and discard a variety of possible diagnoses—from the common to the rare
- It has been said (Kopp, 1997) that there are at least three diagnoses for every disease
  - The one that unifies what you have learned
  - The one you cannot afford to miss
  - The one that it actually is
  - Sometimes they are the same one, but usually not

Valid Hypotheses

- Occam's razor or lex parsimoniae (law of parsimony or law of succinctness)
  - All findings should be unified into one diagnosis
  - This is not always true
  - More than one disease process can exist at one time in the same person

Thinking Under Pressure

- With experience, you will learn to manage nervousness and maintain a steadfast, controlled demeanor.
- Develop a routine mental checklist to stay focused and systematic.

Thinking Under Pressure

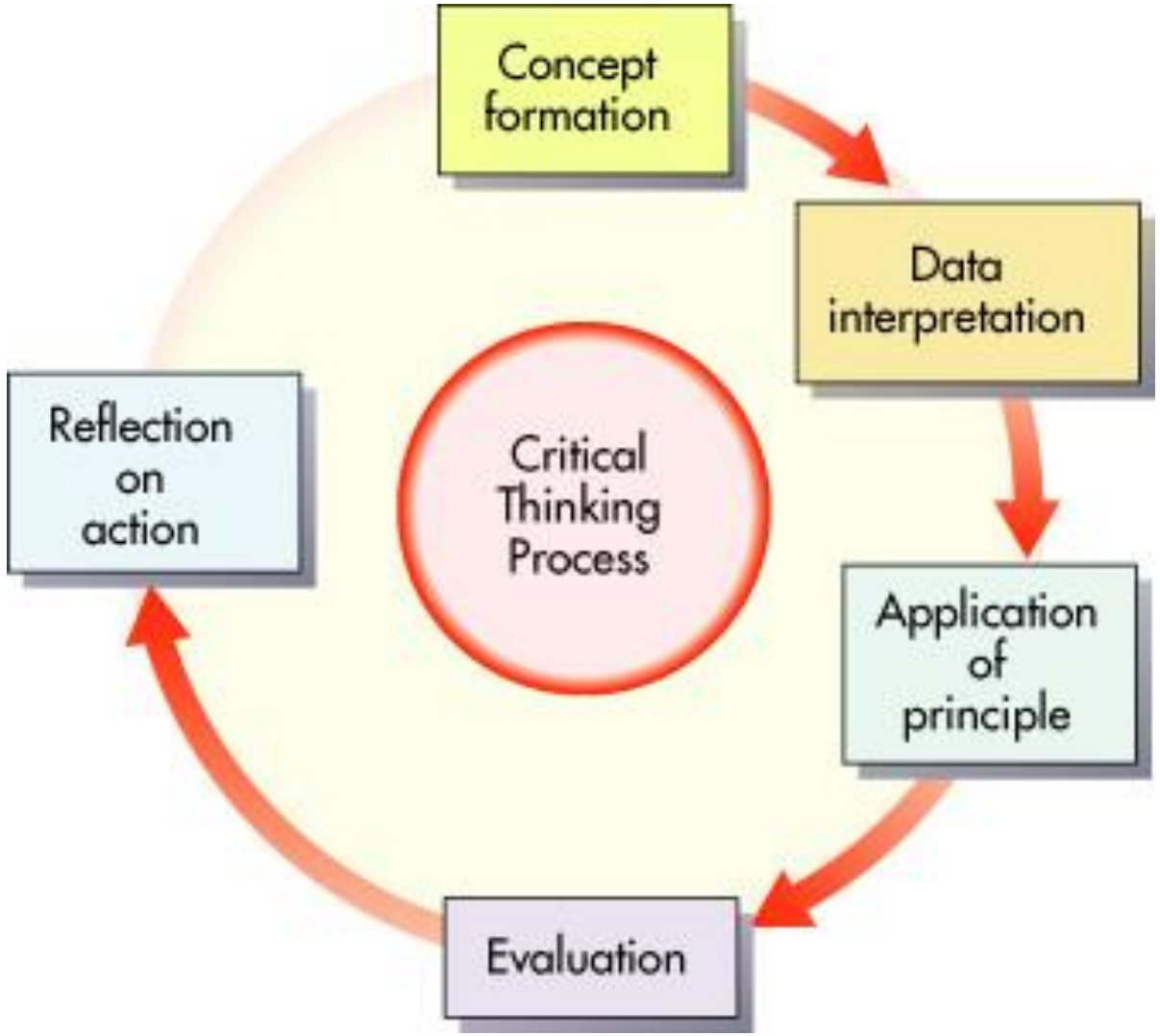
- Hormonal influences from "fight or flight" response
  - Positive effects
    - Enhanced visual and auditory acuity
    - Improved reflexes and muscle strength
  - Negative effects
    - Impaired critical thinking skills
    - Diminished concentration and assessment ability

Mental Conditioning

- Key to effective performance under pressure
  - Skills learned at a pseudo-instinctive performance level
  - Automatic response for technical treatment requirements

The Critical Decision Process

- Form a concept
- Interpret the data
- Apply the principles
- Evaluate
- Reflect



Concept Formation

- Initial information gathered from:
  - Scene findings
  - Initial impression of patient
  - Primary assessment
  - Secondary assessment
- Likely initially use intuitive thought to frame the information received through what is seen, heard, smelled
- Use more rational thought to gather additional information

Interpret The Data

- As information is gathered, often paramedics will be simultaneously interpreting it
- Ongoing interpretation may drive decision to gather more information
- Or, may require immediate action

Interpret the Data: Examples

- Case 01:
  - Paramedics assessing 68 year old male in police cells with abdominal pain
    - They are initially unsure of possible cause
    - Gathered as much information as possible before deciding on treatment or transport

Interpret the Data: Examples

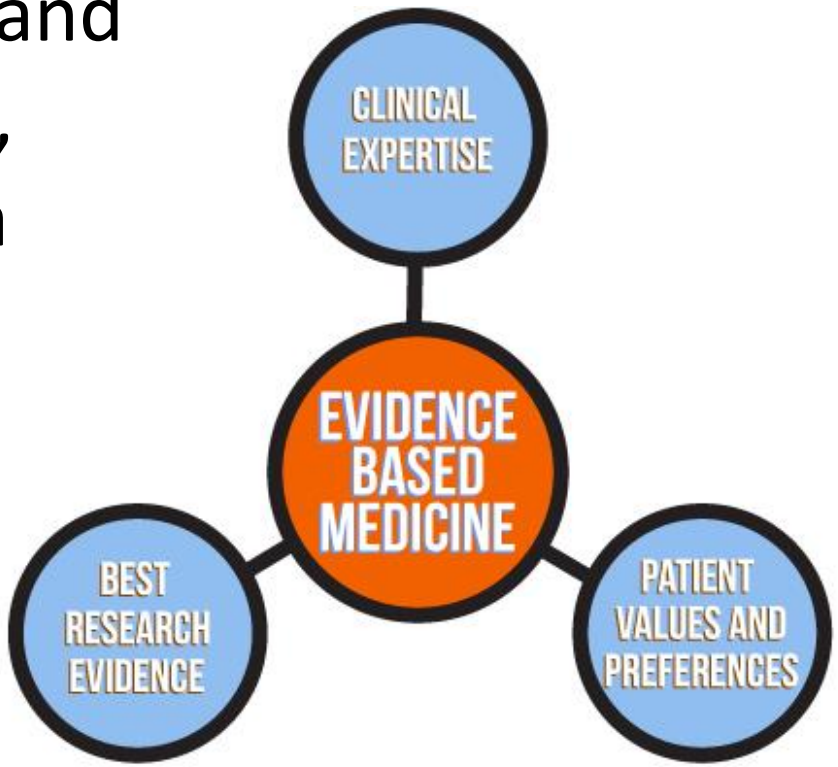
- Case 02:
  - 29 year old female with lower right severe abdominal pain
    - During primary exam, patient states she is 14 weeks pregnant
    - Paramedics begin moving towards quick transport, continuing assessment and treatment en route

Application of Principle

- Paramedic clinical practice is guided by:
  - Foundational education and continuing training
    - Paramedic knowledge and understanding
  - Research evidence
    - Medicine is a continuously evolving science
  - Clinical practice guidelines, protocols
    - International guidelines
    - Local EMS protocols
  - Consultation with others
    - Partner
    - Online Medical Control Physicians
    - Other Paramedics
    - Poison Control, etc.

Evidence Based Practice

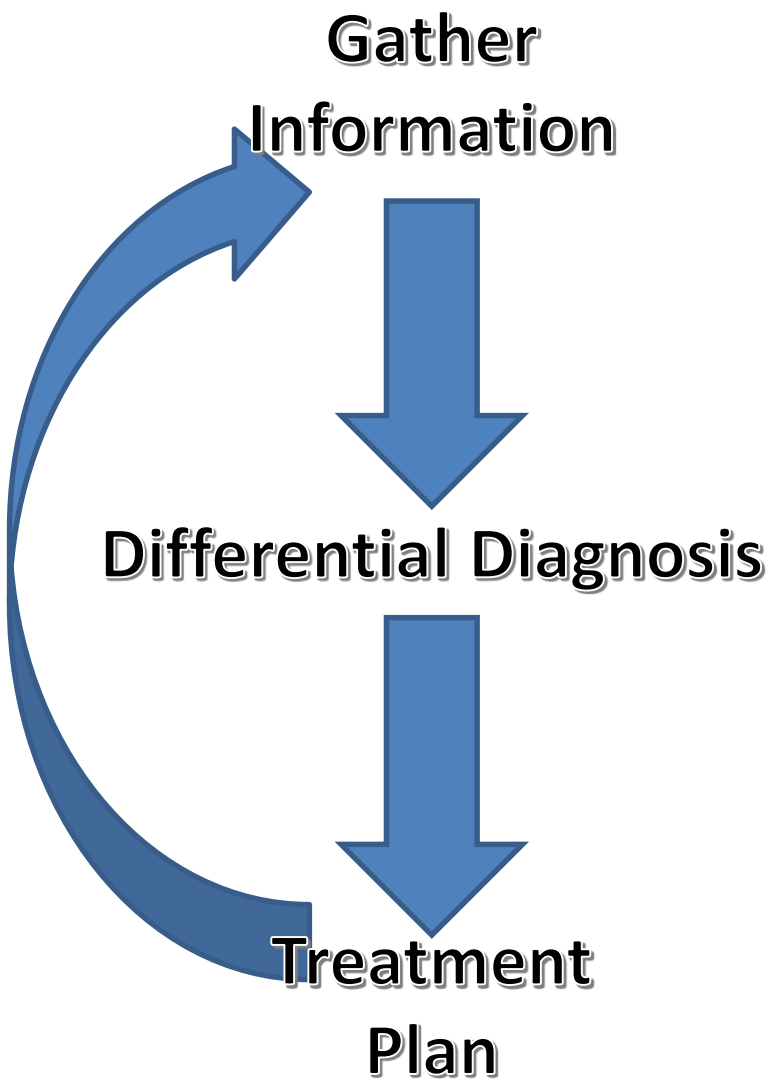
- Merges clinical knowledge, experience, and the current best evidence to formulate the next steps in patient care
- While paramedic assessment, treatment and transport steps often follow a set routine, patient situation and wishes can dictate a tailored approach



Evaluation

- Ongoing assessment to evaluate patient response to treatment decisions (including decision NOT to treat)
- Avoid the cognitive bias Vertical Line Failure
  - Inability to move out of a particular treatment plan when new information is presented
- Re-assessment is an important and key aspect of paramedic clinical practice

Evaluation



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Reflection on Action

- Think about how decisions are being made
  - Before the call
  - During the call
  - After the call
- Can you describe what information you used to make a decision and what strategy you used?

Reflection on Action

- “I decided to load & go.”
- As soon as I saw the patient, I could tell they were sick from how they looked; he was pale, sweaty and I could tell right away he was lethargic.
- I used intuition initially. Then I learned more during the initial assessment.
- There was copious amounts of frank red blood in the toilet and around the room. The patient was hypotensive.
- I used ROWS, as I thought he might have an uncontrolled upper GI bleed.
- We left right away and initiated care with rapid fluid bolus en route.”

Critical Decision Making

EVALUATION AND MANAGEMENT PLAN PUTTING IT ALL TOGETHER

Evaluation and Management

- This is the point where you decide what you think is going on (the diagnosis) and what you are going to do about it (your management plan)
- Your working diagnosis is based on your assessment findings, history with differentials ruled-in or out and matched with appropriate medical care

Evaluation and Management

- Developing a sequence for your critical thinking and clinical decision making process, based on your assessment process, will help you accurately assess your patient and decide upon a working diagnosis.

Evaluation and Management

- Remember that clinical decision making and the critical thinking process takes place throughout the whole call an helps you become a better practitioner.

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Summary

- Paramedic practice
- Thinking under pressure
- The critical decision process
- Critical thinking