Diagnostic Reasoning
A Comparison of Expertise in Nurse Practitioners Physicians Nurses Pamela King

Definition of Diagnostic Reasoning

- "the ability to match the appropriate degree of analytical and intuitive cognition with the type of problem under consideration"

- "Diagnostic reasoning occurs when a state of uncertainly or a discrepancy exists regarding a patient situation. Inferential decisions are made deriving meaning from data".

Defining Diagnostic Reasoning - Physicians

- Kassirer and Kopelman (1991) state, “few would contest the notion that no matter how competent a physician may be at other tasks, outcomes cannot be optimal if reasoning skills are deficient…the prime function of the physician is clinical reasoning: to suspect the cause of a patient’s symptoms and signs to gather additional relevant information, to select necessary tests and to recommend therapy” (p. 7).
Robinson (1997) states that “in the clinical arena, it is imperative for one to make the correct clinical decisions” (p.3).

Nagelkirk (2001) states that a "systematic approach to clinical decision making provides a consistent structure from which clinicians can make optimal choices” (p. 5).

Commonalities in medical, nursing and nurse practitioner diagnostic reasoning fields include:
- a foundation based on the scientific inquiry process (generating hypotheses and testing them)
- the identification of certain biases affecting diagnostic reasoning ability
- observed differences in reasoning skills used by novices vs. experts (Alexander, Benner, Dreyfus and Dreyfus,

Studies that have considered diagnostic reasoning in physicians have suggested that skills used include:
- heuristics
- pattern recognition
- hypothesis generation and testing
(Elstein, Bordage, Kempainen, Kassirer, Round, Sobral)
Studies that have considered diagnostic reasoning in registered nurses have indicated that registered nurses use:
- hypothetico-deductive reasoning
- schemas and intuition
(Benner, Carper)

Relatively few studies have looked at the diagnostic reasoning process of the nurse practitioner (Brykczynski, Burman, Offredy, Ritter, Sands). Those that have, identified diagnostic reasoning skills common to both nurses and physicians.
- Some studies have indicated that NPs use the hypothetico-deductive method, some studies suggest the use of other models
- More than one study has identified intuition as part of diagnostic reasoning in nurse practitioners

Intuition has been identified as one tool employed by experts in nursing and nurse practitioner studies, but not in physician studies
- Most physician studies negate the importance of intuition and suggest it results in diagnostic error
Diagnostic reasoning is influenced by:
- Prior experience
  - Life experience
  - Professional experience
- General cognitive ability
- Novices reason differently and use different reasoning strategies than experts

A Quantitative Tool for Measuring Diagnostic Reasoning - The DTI
- Diagnostic Thinking Inventory developed by Bordage and Marsden
- Scales measure:
  - Flexibility in Thinking
  - Knowledge Structure in Memory
- Asks person doing inventory to think about when they make a diagnosis and self report general preferences

The Diagnostic Thinking Inventory: Sample item:
- Flexibility in Thinking:
  - In considering each diagnosis, I try to evaluate their relative importance
  - Or
  - I try to give equal importance or weight to each diagnosis
The Diagnostic Thinking Inventory Sample Item:

- Knowledge Structure in Memory:
  When the patient present his symptoms, I think of the symptoms in the precise words used by the patient.
  Or
  I think of the symptoms in more abstract terms than the expression the patient actually used e.g. 4 day duration become acute; two hand becomes bilateral.

Nurse Practitioner Studies-How they Approach Diagnostic Reasoning:

- Think Aloud Scenarios
- Computer simulations
- Benner -Classification Systems
- Harji and Tiwari- prototypes and similarity recognition
- Brykczyski-clinical situations

Overlap in thinking about Diagnostic Reasoning:

- What’s the difference between pattern recognition and intuition?
- Cognitive errors and bias-why do they occur and how can they be prevented
Vignette One: Vaginitis

- MD approach
- RN approach
- NP approach

Vignette Two: Breast Mass

- MD approach - probability and evidence
- RN approach - patient concern?
- NP approach - diagnostic testing and patient influenced?

Vignette 3: Chest Pain

- MD approach - Prior experience
- RN approach - Intuition
- NP approach - Pattern recognition
Where we are now
(food for thought):

- Are there really big differences in diagnostic reasoning skills in NPs and MDs?
- How important are these differences? Is it good to be different ie does NP diagnostic reasoning offer something unique to the evaluation of patients and their diagnoses?
- Do these differences go away with acquired expertise?
- What part does intuition play in diagnostic reasoning of nurse practitioners?

QUESTIONS?