

Mastering the Differential Diagnosis for Nurse Practitioner Students

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Abstract

One of the most difficult tasks for a new nurse practitioner (NP) student is the transition from nursing diagnoses to the level of advanced diagnostic reasoning required for advanced practice nursing. Establishing a differential diagnosis based on the analysis and synthesis of assessment data as a critical component of NP practice is addressed in the American Association of Colleges of Nursing (AACN) *The Essentials of Doctoral Education for Advanced Nursing Practice* and *The Essentials of Master's Education in Nursing*.

The authors have utilized a strategy to assist in this transition over the past three years in advanced nursing practice and specialty classes receiving favorable responses from NP student audiences. The purpose of this paper is to demonstrate a method developed and utilized by the authors to aid NP students in mastering the differential diagnosis.

One of the most difficult tasks for a new nurse practitioner (NP) student is the transition from nursing diagnoses to the level of advanced diagnostic reasoning required for advanced practice nursing. Students are often initially overwhelmed when they realize they are responsible for a medical diagnosis that includes consideration of all possible alternatives. The associated skill level with the development of the differential diagnosis and ultimately the correct final diagnosis affects quality patient outcomes. Coupled with this quandary is the dilemma of ordering appropriate diagnostic tests that will help establish the correct final diagnosis within reimbursement guidelines.

Establishing a differential diagnosis based on the analysis and synthesis of assessment data as a critical component of NP practice is addressed in the American Association of Colleges of Nursing (AACN) *The Essentials of Doctoral Education for Advanced Nursing Practice* (2006) and *The Essentials of Master's Education in Nursing* (2011). The National Organization of NP Faculties (NONPF) NP Core Competencies (2011/2012) include critical analysis of data and evidence. The National Task Force (NTF) now requires validation of differential diagnoses and disease management as a component of the NP education program on the certification application. The test plans for the two largest national NP certifiers, American Academy of NPs (AANP) and American Nurses Credentialing Center (ANCC), require successful application of advanced diagnostic reasoning.

Utilizing a guide within each system to determine feasible alternative diagnoses promotes the level of critical thinking necessary to move toward advanced diagnostic

reasoning. The authors have utilized a strategy to assist in this transition over the past three years in advanced nursing practice and specialty classes receiving favorable responses from NP student audiences. Presentation at the NONPF conference (2011) yielded positive NP faculty response. The purpose of this paper is to demonstrate a method developed and utilized by the authors to aid NP students in mastering the differential diagnosis.

Case Presentation

NP students work along-side preceptors in order to develop and hone their skills before graduating and taking on the responsibility of caring for patients. A critical component of this preceptored experience is the case presentation. NP students typically assess the patient, physically examine the patient, and then develop differential diagnoses to guide the next steps of the visit. The case presentation allows the inexperienced NP student to get a more experienced clinician's opinion about the patient (Coralli, 2006). According to Coralli, components of a good case presentation include: an introduction, the history of present illness, a physical examination, potential diagnostic studies, differential diagnoses, a management plan, and summary of the findings. Differential diagnoses are essential to determining the next steps of the visit (i.e. ordering labs or other diagnostic testing, treatment options). Enhancing NP students' ability to use diagnostic reasoning to define the potential differential diagnoses is often a difficult task for NP faculty. For this reason, the authors have developed the G-INVESTMENT acronym.

G-INVESTMENT

G-INVESTMENT is an acronym developed and utilized by the authors on a regular basis to guide NP students in the consideration of all potential etiologies for a symptom or chief concern expressed by a patient. The authors give each student a laminated card with the acronym to use first in classroom and simulated settings then in clinical practice.

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| <p>G- Genetic I-Inflammatory/ischemic/infection/idiopathic N-Neurological V-Vascular E-Endocrine S- Systemic (autoimmune) T-Trauma M-Metabolic E-Environmental N-Neoplasm T-Treatment</p> |
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The following is a deconstruction of the acronym with possible etiologies for the symptom *headache*. Appendix A depicts the model for three different symptoms. This sampling is not meant to be all inclusive. There are potentially many more causes not listed here. Note that some etiologies may fall in more than one category.

The letter “G” represents possible genetic causes of the symptomatology.

G: Glaucoma, familial migraines, poor eyesight

“I” represents the etiologies of inflammatory responses, ischemia, infections, and idiopathic (no known) causes.

I: Flu, encephalitis, meningitis, strep, sinusitis

“N” represents neurological etiologies of headaches in this example.

N: Seizure, Meniere’s disease

The letter “V” represents vascular etiologies.

V: Hypertension, stroke, carotid stenosis, atherosclerosis, aneurysm, atrial fibrillation, vascular migraine

E: Hypothyroidism, anemia, hypoglycemia

The letter “S” represents systemic, or autoimmune, etiologies.

S: Lupus, multiple sclerosis, Hashimoto’s thyroiditis

The first “T” in the acronym represents traumatic etiologies.

T: lumbar puncture, head injury, surgery, skull fracture, motor vehicle accident (whiplash)

The letter “M” represents metabolic causes for the symptom headache.

M: Diabetes mellitus, hypertension, hormonal changes

The second “E” in G-INVESTMENT represents environmental etiology.

E: Intercourse (coital or orgasmic headaches), allergies (smoke, perfumes)

The second letter “N” in the acronym represents neoplastic causes.

N: Brain tumor, oral tumors, cholesteatoma, metastasis

The final letter, the second “T”, represents treatment etiologies for headaches.

T: Drug reactions (nitroglycerine), drug toxicity (digoxin), oral contraceptives, surgery, traction

Strategies to Integrate Differential Diagnoses into Class and Clinical

Several strategies have been used to assist in the transition from professional nurse to nurse practitioner provider over the past three years in advanced nursing practice and specialty classes receiving favorable responses from NP student audiences. On the first day of Advanced Assessment class, G-INVESTMENT, is introduced to the students. As mentioned earlier, each student is given a laminated copy of the mnemonic to use for class and keep with them in the clinical setting. G-INVESTMENT is introduced with a consistent graphic organizer to assist students in thinking through each component. Several classroom activities have been used to enhance student participation.

Group assignments: The class is evenly divided into several groups with each group assigned several letters of G- INVESTMENT so that all areas are covered for a particular symptom. This approach has yielded the largest number of diagnoses as students are informally competing against their peers. Students are asked to justify their choices if the symptom is not a primary or obvious characteristic. Further discussion often occurs related to a particular diagnosis and the incidence and prevalence of the presenting symptom. Students are encouraged to use their texts and electronic resources during these informal discussions. Students or faculty members who have cared for individuals with the diagnosis are encouraged to contribute to the discussion.

Pair and share is a variation of the group assignment in which two students will be assigned one area of the symptom to discuss and share with the class. Abdominal pain, for example, offers an opportunity to review anatomy and the pain associated with

different organs in the abdominal region as well as the relationship of pain to eating and other bodily functions.

Class discussion is the most frequent application of G-INVESTMENT in the advanced assessment course. A symptom is selected and the class generates the list which serves as content review and application of the system covered in class. Students are strongly encouraged to read assignments and prepare prior to class so that they can be more engaged in these discussions and problem based learning.

Preceptor involvement: Students in the clinical management courses are encouraged to share G-INVESTMENT with their preceptors. Students and their preceptors may compare and contrast other mnemonics with a certain condition. These comparisons have been favorable toward G-INVESTMENT. The authors have engaged the student and preceptor in discussion of the utilization of G-INVESTMENT when time has allowed during direct observation clinical site supervision.

Examination: Students are alerted to inclusion of the content on the midterm and final evaluation to emphasize importance of integration of the differential diagnosis into learning.

Simulation: G-INVESTMENT is a component of the case presentation with a standardized patient or a focused physical examination on a human patient simulator. Students also use G-INVESTMENT to assist with the differential diagnoses required with scenarios utilizing Harvey, the heart and lung simulator.

Clinical Practice Logs: Each student in Advanced Assessment is expected to submit a focused examination in writing, including G-INVESTMENT, to demonstrate critical thinking processes used to acquire the final diagnosis. Students are also expected to describe how the diagnostic testing and treatment plans were related to the differential diagnoses.

Peer Grading: Since students take Advanced Assessment prior to their clinical management courses, the initial history and physical is performed on a friend or family member including the systems covered by that point in the semester. As novice NP students, they are instructed in advance to refer any patients with abnormalities to the patient's primary care provider (PCP). Following the midterm examination student work is randomly assigned to a classmate as a peer evaluator. Random assignment is used to minimize the possibility of students favorably grading the paper of a friend or exchanging papers with a mutual expectation to grade favorably.. Graded papers, which include student author's name and student evaluator's name, are then submitted to faculty for a final review. A second assignment is required later in the semester to

address the remaining body systems. This course utilizes a reverse class format with some content presented on BlackBoard via Mediasite lecture capture to allow for more discussion of integration of content and hands on practice.

CONCLUSION

Novice NP students need assistance as they made the critical transition from professional nurse to NP provider. Helping students internalize memory aids to thoroughly address a presenting system, assists them in avoiding potentially harmful shortcuts in the diagnostic process as they progress through their program and into the role of NP. The G-Investment acronym can be integrated into more advanced management courses as students evaluate the need for diagnostic tests for certain complaints. As a recent graduate quipped, moving from the emergency room to primary care, you cannot order a scan on every patient in primary care, developing competence and confidence in diagnostic reasoning is essential. Application of G-INVESTMENT can assist that transition. A G(ood) INVESTMENT of time and energy.

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References

- American Association of Colleges of Nursing* ([AACN], 2011). The Essentials of Master's Education in Nursing. Retrieved 7/19/2012. Available: <http://www.aacn.nche.edu/education-resources/MastersEssentials11.pdf>
- American Association of Colleges of Nursing* ([AACN], 2006). The Essentials of Doctoral Education for Advanced Nursing Practice. Retrieved 7/19/2012. Available: <http://www.aacn.nche.edu/publications/position/DNPEssentials.pdf>
- Coralli, H.C., (2006) Effective case presentations—An important clinical skill for nurse practitioners *Journal of the American Academy of Nurse Practitioners*; 2006;18(5), 216-220,
- National Organization of Nurse Practitioner Faculties* ([NONPF], 2011/Revised 2012). Nurse Practitioner Core Competencies. Retrieved 8/30/2012. Available: <http://www.nonpf.com/associations/10789/files/NPCoreCompetenciesFinal2012.pdf>