Integrating E-Learning Materials into Nurse Practitioner Curriculum: *Innovations and Options*

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Integrating WISE-MD Case Based Modules into Advanced Health Assessment: A pilot with promise

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WISE-MD
Web Initiative for Surgical Education

WISE-MD is an e-learning program designed and built for teaching the principles of surgery to third year medical students.

WISE-MD

The program consists of 20 modules. The content has been provided by medical educators from major US medical centers.

Abdominal Aortic Aneurysms	Adrenal Adenoma	Anorectal Disease	Appendicitis
Bariatric	Bowel Obstruction	Breast Cancer	Burn Management
Best Practices	Carotid Stenosis	Cholecystitis	Colon Cancer	Diverticulitis
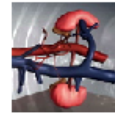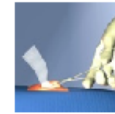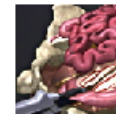
Skin Cancer	Thyroid Nodule	Trauma Resuscitation	Hypercalcemia	Inguinal Hernia	Pediatric Hernia	Pediatric Pyloric Stenosis

WISE-MD

Using Multi-media, the modules are designed to not only provide high quality content….
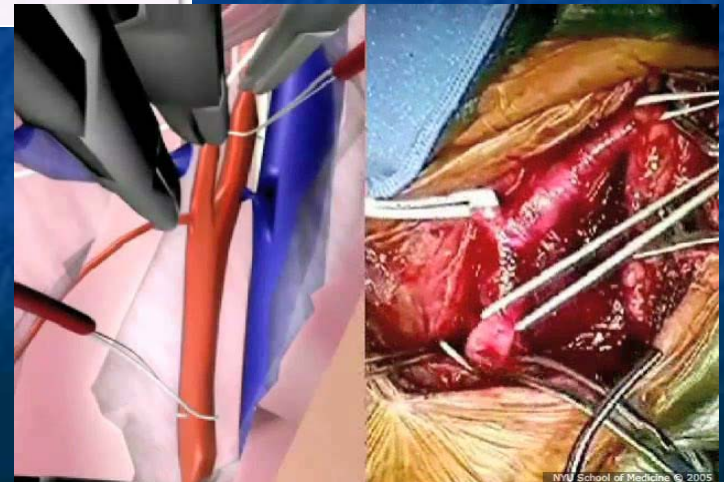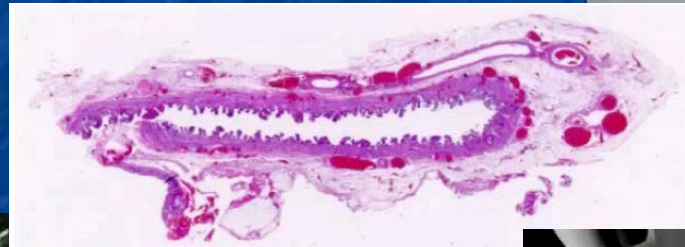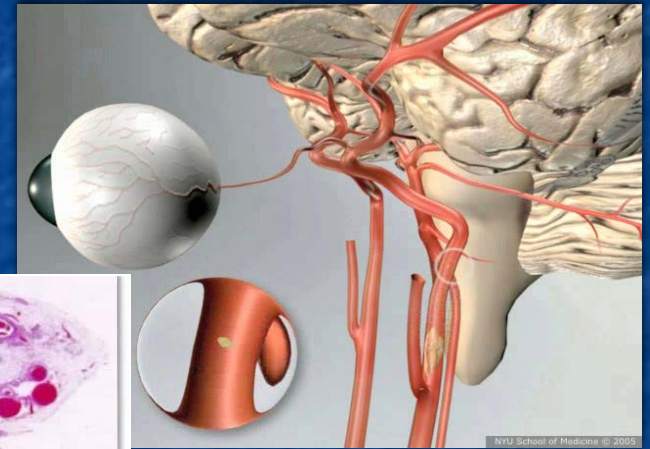
WISE-MD

…the modules also stress professionalism and communication skills.

WISE MD

WISE-MD modules provide an independent learning experience

- Relatively high fidelity modules developed for third year medical students during surgery clerkship to ensure consistency and exposure to commonly encountered scenarios for which surgery could be/*is* the treatment option.

- Created to address gaps in surgical education r/t shorter hospital stays and increased use of outpatient care for pre- and post- surgical care.

GSN pilot integrated WISE-MD into Advanced Health Assessment (AHA)

- To improve/facilitate transition of NP students from (AHA) to thinking on their feet in precepted clinical experiences.

- The modules are common entities that both primary care and acute care NPs will diagnose, manage and consult/refer as appropriate

GSN used 4 of the 23 modules for this study in Advanced Health Assessment

Diagnosis and management of the patient with:

- an abdominal aortic aneurysm (AAA)
- cholecystitis
- a thyroid nodule
- appendicitis

Anatomy

- Location
  - 2 lobes anterior to larynx
  - Connected by isthmus
- Blood supply
  - Thyroid arteries:
    - Superior:
      - Branch of external carotid artery
    - Inferior:
      - Branch of thyrocervical trunk
  - Thyroid veins:
    - Superior
    - Middle
    - Inferior
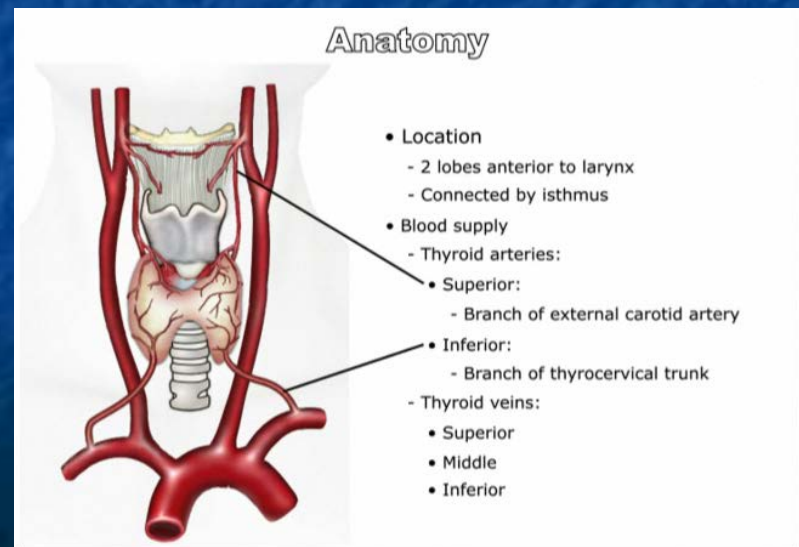
Health professions are all struggling to quantify and measure critical thinking

- We all want our students to think critically, but teaching it and measuring it is evading nursing, medicine and others.

- No common definition, but we base our outcomes on it.

Sources: Millennium conference 2011; Advisory Board for Wise-MD, 2013.

Method

- Participants were consented and randomly assigned:

  - Control group (n=7) is instructed to record thoughts freely on module 1; view modules 2 and 3; and to record thoughts freely for module 4.

  - Intervention group (n=9) is instructed to record thoughts freely on module 1; complete guided deliberate reflection for modules 2 and 3; and to record thoughts freely for module 4.

Feedback Results from GSN pilot survey 16/26

	Not Useful	Somewhat useful	Useful	Very useful
Pathophys			3	11
Developing DD			3	11
Ordering and interpresting DX tests			4	10
Seeing surgery		1	7	6
Post op care		1	5	81
Developing Critical thinking			3	11
Presenting to preceptor	1	2	5	6

Most useful aspects (selected)

- **Clinical decision making**
- Patho mixed with the patient complaints and creating diff dx. were most helpful.
- I enjoyed seeing how the surgery was done. It makes you remember how much manipulation there is and why people are in pain.
- Integration of Hx and PE with Diagnosis
- Tests to order and interpretation.
- Walking through the entire process
- Visual learning from start to finish
- Easy to understand and smooth flow make them very helpful in envisioning **critical thinking pathway** for each diagnosis.

Selected favorable quotes

- *I liked seeing the physical exam and the rationale for some of the exam techniques.*

- *Interpretation of imaging studies and the explanations of the surgeries are performed using computer graphics side by side with the actual surgery which helped to clarify anatomical structures.*

Selected other favorable quotes
(continued)

- Review questions and additional materials.

- Excellent modules! I plan to view and complete all of the modules during this next year. Thank you for making this opportunity available to graduate student nurses.

Faculty Take Away Points

- Case-based modules are an easy addition to advanced health assessment.
- Modules can be done at student's leisure
- Next steps at Umass GSN is to utilize the modules for remediation and measure the student process

Integrating e-Learning Cases
UNH Family Nurse Practitioner Program
Donna Pelletier, DNP, APRN, FNP

TALKING POINTS:

- 5 years experience with MedU cases; 3 years experience with widespread integration

- Feedback from both faculty and students

- Perceived value

- Suggestions for improved experience

- Plans for utilizing MedU cases in future

Disclaimer

University of New Hampshire is one of many institutions that purchases access to CLIPP and fmCASES, two of the products available from iInTIME, home of MedU virtual patient cases

Disclaimer Cont.

The MedU program has cases available covering

- Pediatrics (CLIPP)
- Family Medicine (fmCASES)
- Internal Medicine (SIMPLE)
- Radilogy (CORE)
- Surgery (WISE-MD)

available for purchase through iInTIME.

Virtual patient cases are designed to supplement traditional clerkship teaching and patient care activities. They are most effective when fully integrated into the curriculum.

After you respond to Mrs. Martinez's question, you have Christina go to the bathroom to leave a clean catch mid-stream urine sample, while you excuse yourself to confer with Dr. Nayar. When you find Dr. Nayar in the hallway, you inform him of Christina's complaint of dysuria, and you tell him how you answered Mrs. Martinez's question.

Dr. Nayar tells you, ❓ "Dysuria is very common. We need to make sure we do not find evidence of an upper urinary tract infection (UTI). What are symptoms of pyelonephritis?"

"You handled this very nicely," Dr. Nayar reassures you. "We also know that Christina does not have other risk factors for a complicated infection such as recent instrumentation or known anatomic abnormality of the urinary tract. Let's see what her urine shows, then go talk with the Martinez's together."

You both go to the office lab, where the medical assistant is finishing doing Christina's urinalysis. You review the 💬 urinalysis results together. Dr. Nayar asks you, ❓ "What's your interpretation of this urine?"

Dr. Nayar says, "Good. In a young woman with typical symptoms of a UTI and no concern for upper tract infection, you do not need to see both leukocyte esterase and nitrites positive for a presumptive diagnosis of uncomplicated UTI and empiric treatment. What antibiotic should we give Christina?"

You reply, "In a talk on UTIs, I think they said that trimethoprim-sulfamethoxazole or ciprofloxacin was first line therapy, depending upon local resistance patterns."
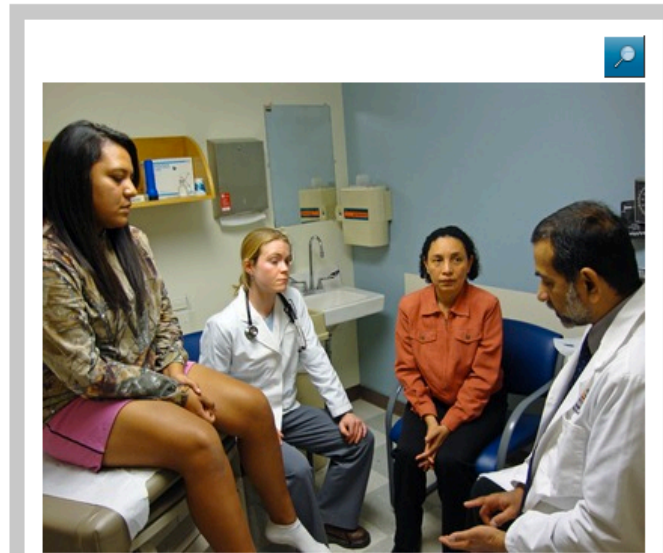
Dr. Nayar explains dysuria to Christina.

Tools/Resources

Clinical Reasoning
Findings
+Add finding
Differential diagnoses
+Add diagnosis

- The cases have been developed predominately for third year medical students to ensure comparable learning experiences across training sites
- Created to address gaps in medical education
- Helps to ensure consistency and exposure to commonly encountered scenarios
- Content is provided by medical educators

Question:

In which patient groups should you obtain a follow-up CXR? You may pick one or more answers.

Multiple Choice Answer:

Please select your answers.

A ☐ Yes, on all patients. It is standard of care

B ☐ On all patients over the age of 40

C ☐ On patients with recurrent pneumonias

D ☐ Only in children

E ☐ On patients whose symptoms do not resolve

Submit

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- **Integration of *fm*CASES and CLIPP cases across all three semesters of clinical practical**
  - Students assigned to complete all 33 *fm*CASES in first clinical semester (adult health focus)
  - Students assigned to complete all 32 CLIPP cases in second clinical semester (pediatric health focus)
  - Students encouraged to review all *fm*CASES and CLIPP cases in third clinical semester (family health focus)

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- **_fm_CASES and CLIPP cases** assigned weekly and graded for completion and time spent on each case
  - Students have written schedule of case due dates in course syllabus
  - Students instructed to allot a minimum of 45 minutes for each case
  - Faculty unable to access answers given by the student to specific questions within cases
- **_fm_CASES and CLIPP test banks** used selectively for mid-term and final exam questions
  - Exams contained 30-70 questions and weighted from 40-100% of course grade
  - Average exam scores consistently in the 80-86% range

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Students instructed to:

- Access the cases prior to the first class
- Use **case analysis tool** as a learning aid to develop clinical reasoning skills (not graded)
- Print out **case summaries** for in-class discussions on related topics and review for exams

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Faculty directed to **MedU educator resources:**

- **Case Lists** with summaries of case
- **Case Search** with ability to search for key terms
- **Questions for Further Consideration** (QFCs) on each case to enhance classroom discussion
- Access to **log data** about student-specific and aggregate use of cases
- *fm*CASES and CLIPP **test banks** with oversight by Program Director to maintain integrity of questions

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Faculty feedback from experience with virtual patient cases (N=5):

- Fosters self-directed learning and independent study.
- Has shown high faculty and student satisfaction.
- Cases have defined outcomes, use multiple learning strategies, and capture clinical variation.
- Develops advanced interpersonal and communication skills, including coaching for positive behavior change, collaboration and professionalism, and complex decision making.
- Offers greater consistency in the delivery of learning experiences and enabling learners, rather than patient availability, to drive educational experiences.
- MedU staff prompt to respond and resolve user issues.

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Student feedback from experience with virtual patient cases (N=78):

- "Puts my decision-making tools to the test."
- "Allows me to move at my own pace and be responsible for my own progress."
- "Evidence-based information linked directly to cases makes the information readily available for decision making."
- "Allows for repetitive and deliberate practice of clinical skills."
- "Allows me to make mistakes w/o adverse consequences."
- "**UndergroundMed** videos are wonderful learning tools that simplify complex concepts."

Integrating e-Learning Cases
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Perceived Value:

- Complements traditional classroom instruction.

- Has educational advantages of over real-life patient encounters.

- Empowers the learner.

- Reduces burdens on training resources, including clinical faculty and patients.

- Students value the multimedia, interactivity, rich content, and focus on clinical reasoning.

- Covers content in areas where clinical preceptorships are difficult to find.

- Produces rich and meaningful data for users as they move through each clinical scenario and uncover gaps in knowledge.

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Suggestions for Improvement:

- Allow students to explore exactly how their decisions would impact patient outcomes if they made a wrong decision.

- Design cases to include other disciplines in clinical scenarios to give learner an inter-professional experience and ultimately, a better understanding of the skills and expertise of other professionals.

- Make cases and exam bank questions more user friendly to NPs, PAs and others by replacing "physician" and "doctor" language with "provider" or "practitioner".

- Align cases, individually and collectively, with the NONFP Core Competencies, including inter-professional practice.

Integrating e-Learning Cases
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Plans for Future:

- Require students to complete the **case analysis tool** on select cases and grade on ability to demonstrate learning by analyzing and expressing information.

- Add **SIMPLE** cases into our FNP curriculum so all three clinical semesters are using cases.

- Offer cases to preceptors for **preceptor training**.

- Conduct **research on outcomes** of integrating cases in curriculum.