Electronic Medical Record Simulation to Enhance Learning of MNT
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OBJECTIVES
At the end of the session, the participant will be able to…

- Describe a scenario for an adult case study available on the simulation software
- Discuss pedagogical foundations of simulation projects
- Identify case studies available on the OpenAccessEDU electronic medical record software
- Explain how to access the electronic medical record (EMR) simulation software on the Academy server

Goals and Objectives of EMR Project

- Theoretical framework
- Strategies that foster critical thinking
- Engaging our students in active learning
- Provides opportunities to demonstrate application of evidence-based decision making

Pedagogical Foundations

- Simulation defined
- History of simulation
- How simulation fits into dietetic education
- Educational Theory
- Research supporting use of Case Studies

What is Simulation?

- Simulation refers to the technique of imitating the behavior of some situation or apparatus, especially for the purpose of study or personnel training
- In healthcare, its an “approximation of actual clinical situations”
- Fidelity refers to the degree the simulation method resembles a real-life experience
  - High fidelity is the most realistic

Simulation is not a new concept!

1950s CPR man
1960s Harvey cardiac mannequin
SimMan
Avatars
The Array of Simulation Experiences

• Games
• Classroom scenarios
• Case Studies
• Labs
• Simulated patients
• Mannequins
• Computer assisted virtual reality simulators
• Mock clinic and hospital facilities

Benefits of Simulation

• Bridge classroom learning with practice
• Advanced learning - Active and critical thinking
• Retention of knowledge
• Increased learning opportunities in the environment of declining patient populations
• Lends itself to interprofessional training
• Recreate rare clinical situations
• Non-threatening environment
• Enhance patient safety

How Simulation Fits into Dietetic Education

• Simulation can be a critical component for teaching and assessment
• There are two basic purposes of assessing student/intern learning:
  — To determine if an individual student has developed the required knowledge and competencies to perform as an entry-level dietetic technician or dietitian.
  — To determine the effectiveness of a program and its curriculum in fostering the development of knowledge and competence in its students/interns.

Examples

Theoretical Framework - Constructivist Learning Theory

• Learning is an active process in which learners construct new ideas or concepts based upon their current/past knowledge
• Key components:
  — Knowledge is constructed, not transmitted
  — Learners play an active role in the learning process
  — Experiential learning
  — Evaluation by learning
**Best Practice Features of Simulation**

- Formative feedback during simulation
- An opportunity for deliberate and repetitive practice
- Curriculum integration
- Outcome measurement
- Simulation fidelity
- Skills acquisition and maintenance
- Mastery learning
- Transfer to practice
- Team training
- High stakes testing
- Instructor training
- Educational and professional context
- Variety of conditions and range of difficulties

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**Planning a Simulation**

- Determine objectives
- Define individual learner outcomes
- Choose the best simulation medium (HPS, task trainer, SP, etc)
- Be specific in steps and/or details. Develop checklist to assess task completion. If SP, determine role (evaluating & feedback), train SP, and develop any appropriate checklists.
- Decide to record or not record
- Develop materials or case.
- Determine methods of post-experience feedback and/or debriefing.

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**Research supporting use of case study**

**FOR THE STUDENT:**
- Promotes active learning
- Increases comprehension of complex issues
- Increases variety of patient experience
- Standardizes experiences across supervised practice

**FOR THE FACULTY:**
- Allows for us to rethink our approaches for teaching
- Renews enthusiasm for course material
Start with Backward Design

• Step 1: Identification of desired results, goals and objectives

• Step 2: Determination of acceptable evidence for assessing achievement of desired results

  Then:

• Step 3: Design learning experiences.

Identification of desired results, goals and objectives

• What should students, who successfully complete this case study, know, understand, and be able to do?

• These objectives will drive the data within the case and the questions that you ask the student to complete.

Objectives - The student will be able:

• Epidemiology:
  • Etiology
  • Pathophysiology
  • Medical treatment
  • Nutrition Care Process
    • Assessment
    • Diagnosis
    • Intervention
    • Monitoring/Evaluation

• ANY OTHER OBJECTIVES?

Determination of acceptable evidence for assessing achievement of desired results

• Evidence based guidelines

• Research Literature

• Basic Sciences

Topic for our case: Heart Failure

• How should your topic be chosen?
  – Incidence, prevalence, mortality rate, admissions/discharge data
  – Role of nutrition therapy

The Learning Process

• First Exposure: anatomy, physiology, other nutrition coursework

• Processing

• Assessment and Feedback
Epidemiology

- This will set the foundation of the demographics for our patient narrative.
- What do we know about epidemiology of heart failure?

Heart Failure Case

- EGN is a 66 year old female admitted to the cardiac intensive care unit with acute shortness of breath and increasing chest pain that awoke her from sleep last night. The pain has been constant since that time. She called her primary cardiologist who advised her to come to the ED where she was transferred to the Cardiac ICU.

Etiology – Risk Factors and potential complications

- Allows us to design the presenting scenario for the diagnosis
- For heart failure, we may want to emphasize certain contributing risk factors: previous heart disease diagnoses
- Family history – We can bring in the discussion of complications from heart failure

History

- Medical History: CAD s/p 4 v CABG 3 years ago; dyslipidemia, hypertension
- Surgical History (what might be typical for this patient with her previous cardiac history? Is there something in our objectives that needs to be presented here?) Catherization heart/w coronary angiogram, 3 vessel CABG, Caesarean section x 2 (1987 and 1970).
- Medications at home: (can highlight drug-nutrient interactions - this is also the place where you might introduce supplements – if this is one of your original objectives): Metoprolol 25 mg BID, Pravastatin 80 mg daily, Lisinopril 2.5 mg daily; aspirin 81 mg daily.
- Tobacco use: Never smoked
- Alcohol use: 1-2 x per week
- Family history: Parents both deceased with + cardiac history; brother and sister both have CAD.

Demographics

- Marital status
- Years education
- Language
- Occupation
- Hours of work
- Household members
- Ethnicity
- Religious Affiliation

Pathophysiology

- Physician's history/physical
- The nursing assessment and
- The initial nutrition assessment

TO DEMONSTRATE THE KEY FEATURES OF THE PATHOPHYSIOLOGY FOR HEART FAILURE.
**Use Standard History/Physical Outline**

- Admitting History/Physical:
  - General appearance: pale, obese woman in obvious distress
  - BP: 138/90
  - Height: 63”, Weight: 84 kg
  - Heart: normal rate, regular rhythm, no m/r/g appreciated, well healed midline incision
  - HEENT: PEERL, EOMI, sclera anicteric, MMM
  - Eyes: WNL
  - Ears: WNL
  - Nose: WNL
  - Neck: jugular venous distension in sitting position with a positive hepatojugular reflux
  - Genitalia: deferred
  - Neurologic: alert and oriented x3, no focal deficits, CN II-XII grossly intact
  - Extremities: WWP, 1+ peripheral edema, pulses 2+ in radial and DP
  - Skin: Warm and dry, no rashes
  - Chest/Thorax: Rales in both bases posteriorly
  - Abdomen: soft, NT, ND, normal BS
  - Dx: Unstable angina r/o HF

**Treatment**

- Assessment and Plan:
  - TIMI Score: 4
  - Unstable Angina:
    - Chest pain sounds slightly atypical, but responds to NTG and has significant CAD with TIMI of 4.
    - Will load with 300mg Plavix. Continue ASA 81mg and start Heparin gtt. Trend troponins and BNP.
    - May need NTG drip to get CP free. Continue Metoprolol, Lisinopril and Pravastatin.
    - Will review cath films and determine best course of action in the morning (stress test vs LHC).
    - Hypertension, Controlled:
      - Continue Metoprolol 20mg BID and Lisinopril 2.5mg daily
    - Hyperlipidemia:
      - Continue Pravastatin 80mg daily
    - FEN:
      - No IVF. K > 4 and Mg > 2. NPO after midnight in case further investigation is needed.
    - PPx: Therapeutic Heparin
    - Code: FULL

**Nutrition Care Process**

- Nutrition: Remember the information you provide should be consistent with your student objectives regarding heart failure
  - Diet HX: 24 hour recall – diet from home
  - Food Allergies/intolerances/aversions
  - Previous nutrition therapy
  - Vitamin/Mineral/Supplement Intake
  - Activity level

**Design your questions**

- Organize around your student objectives:
  - Epidemiology
  - Etiology
  - Pathophysiology
  - Medical Care
  - Nutrition Care Process
  - New Research or use of evidence based guidelines

**Labs**

- Identify those that should be abnormal to fulfill your student objectives
  - be consistent with patient medical history.

**RD-SIM**

- Combining both case study and simulation into a learning experience for students
- Format for faculty to upload their own case study
- Allow for faculty to assign student to use case study within the system
Login Screen: The address 50.56.172.164:3000 will change in the future.

After you login in you will see your name

Click on individual Case Study

Clicking Users

Creating a New Case Study

Case Study Successfully created!!
But now we need to put case study information in the OpenEMR system.

Creating Student Groups
Targeted ACEND Competencies & Knowledge Foundation

CRD 2.7, CRD 2.5 – make referrals and collaborate
KRD 3.1, KDT 3.1, CDT 3.1, 3.2 – Perform NCP
CRD 3.2, KRD 2.1, KDT 2.1 – communication skills
KDT 4.5 – content related to health care delivery
CRD 4.5, CDT 4.4 – use informatics technology
CRD 4.11, KRD 4.5 – code and bill for services

What is in the RD-SIM?

ADULT
• Acute pancreatitis
• Oncology
• Heart Failure
• Stroke
• Outpatient (dyslipidemia)
• Two more case studies in development

PEDIATRIC
• Growth failure
• Cystic Fibrosis
• Obesity with type 2 diabetes

What is Next?

• Who can use the RD-SIM?
  – Program directors
  – Program faculty
  – Preceptors
• Sign up for an account
  – Contact Patti-Landers@ouhsc.edu
• Expected to be available by March, 2014
• Tutorials at NDEP Spring Meetings

• Two more case studies in development