“…without proper reflection on our underlying values and beliefs about teaching and learning, we leave the education of our students to the whim of every educational trend that comes our way.” (Dewey, 1938)

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We have come a long way in using Simulation

Military Simulation 1914
Medical Simulation 2011

Simulation defined

- “approximation of actual clinical situations” ¹
- “a dress rehearsal of a real event where as many mistakes as possible can be made – lessons can be learned but no one comes to harm” ²
- Simulation based medical education is “a method of education that integrates with, and complements, other traditional and nontraditional training approaches, such as lectures, problem-based learning, and bedside teaching” ³
- Rehearsal: “a form of practice: repetition of information” ⁴

Simulation involves a wide range of experiences

- Games – classroom scenarios
- Case Studies (book or computer based)
- Labs - using human or animal tissue
- Procedural tasks vs. complex clinical responses
- Simulated patients – role playing; volunteers and actors
- Computer assisted virtual reality simulators
- Mannequins – task trainers
- Mock clinic and hospital facilities

Simulation: More than a teaching tool….EVALUATION!

- Simulation can be a critical component for measuring student and program outcomes.
- 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.
    - 38 Competencies/Learning Outcomes for Coordinated Programs (CP).
    - 38 Competencies/Learning Outcomes for Dietetic Internships (DI)

Transition from didactic learning to supervised practice

- Dependent on availability of sites and preceptors
- Wide range of experiences that vary due to patient populations
- Every dietetic student should receive equivalent, consistent training
Experiences, either real or simulated are simple catalysts for learning. The learning does not take place until after the experience during the debriefing.

Comprehensive student growth and success results from student engagement. Research indicates that the more engaged the learner is, the bigger the chances of his or her success in the module. Students with high self-efficacy have higher engagement.

Activities
Self-Evaluation
Assignments
Work integrated learning

.......but are the students engaged?

Adults need to know why they need to learn something
Adults need to learn experientially
Adults approach learning as problem-solving
Adults learn best when the topic is of immediate value
Adults bring prior experience and beliefs into the learning experience
The learner should be allowed to discover what they already know, believe and can do.

Whole-person learning requires that critical reflection and affective learning are integrated into the main learning experience.

For real transformation to take place, there is a need for learning to take place in a “safe, open and trusting environment.”

Learners discover what they don’t know in communities that care.

Model of Simulation

Transform
Engaged Learners
Achievement of Competencies

Simulation Components

Simulation

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

Planning a Simulation

- Determine objectives
- Define individual learner outcomes
- Choose the best simulation medium
- Develop materials or case.

- Be specific in steps and/or details. Develop checklist to assess task completion. If SP, determine role (evaluating &/or feedback), train SP, and develop any appropriate checklists.
- Decide to record or not record
- Determine methods of post-experience feedback and/or debriefing.

Our experiences with Simulation

- Standardized Patients
- Simulation using SimMan

Triangulation of feedback

Three students per group: patient, RD, observer

- RD: Your patient was diagnosed with emphysema several years ago but is now hospitalized with pneumonia. Information: 65 year old male Ht. 5'11" Wt. 165. All labs wnl except elevated WBC consistent with left infection. Outline pertinent nutrition questions that you will need in order to complete your assessment. Make sure that you ask questions that will identify the most common nutrition problems seen with emphysema.

- Patient: You were diagnosed with emphysema several years ago but now hospitalized with pneumonia. Information: 65 year old male Ht. 5'11" Wt. 165. All labs wnl except elevated WBC consistent with left infection. You are on antibiotics that are making you nauseous - you are on oxygen therapy by nasal cannula but you tend to take it off a lot since it gets in your way especially when you eat. Outline your signs and symptoms that you should portray as a patient with emphysema – you will need to have a diet history that can highlight any nutrition problems that are common with emphysema.

- Observer: You must evaluate not only accuracy of information but also provide suggestions for improvement in listening skills, clarity of information and other required components on checklist. You should stop the scenario if wrong information is provided.

Our current experience with 'Standardized' Patients

- Occurs 4 x during junior year of coordinated program within the context of nutrition therapy courses
- Basic skills that are practiced prior to first standardized patient include written case studies, observation, role modeling and triangulation of feedback

All experiences within:

- Clinical Skills Education and Assessment Center

Planning

- Development of evaluation instrument – what do I want to make sure that all students perform in this activity?
- Development of case
- Development of medical record
- Training of Standardized Patients – content for patient role and evaluation of student
Preparing the student

- Orientation to skills lab
- Clear directions – time limits
- Orientation to evaluation instrument
- Know they will have one of two specific diagnoses (concurrent with nutrition therapy course content)

Encounter

- The students enter the clinical education lab and are assigned one of two scenarios.
- Students are timed for review of medical record. At the end of 15 minutes, the students are signaled to enter the patient’s room.

- As the student enters the patient’s room, videotaping of the encounter begins. The students are given a maximum of 30 minutes with the patient.

- After the student leaves the patient’s room, they then have 20 minutes to complete their medical record documentation.

Video of encounter

Evaluation

- SP evaluation – online narrative to which students have immediate access
- Faculty evaluation – onsite observation comments and evaluation of video tape
- Individual feedback – videotape with specific comments throughout
- Grading
- Self-efficacy
• Use 7 MNT Modules for:
  - Oncology
  - DM Type 1
  - DM Type 2
  - Wound Care
  - Renal
  - Myocardial Infarction
  - Hypertension

• Use of SimMan (simulation robot)
• Use of Preceptors

Learning objectives mapped to core content within each of the 7 learning modules

Module Format
- Lecture
- Practice with case studies
- Active knowledge acquisition through chart review
- Fill out screening forms
- Practice role play with each other
- Interview Sim Man (recorded with 1 preceptor evaluating and 1 as SimMan patient using script)
- Debriefing — Either with preceptors or class
- Charting using NCP

 Comments from Students:
“I am really blessed that we all got to experience what we did. It was helpful and has put me at ease before going into clinical 2. I am thankful for all the preceptors that were able to take the time and teach us; especially since they each had very different backgrounds/expertise. I would definitely recommend doing this again.”
Comments from Students:

- "The one-on-one time with preceptors is AMAZING! That was by far the most helpful. I would recommend even more preceptor-student time with personal evaluation. I would have liked more time practicing education of patients"

- "I really enjoyed having the different preceptors with such different perspectives and experiences. While I understand the concept and theory of having SIM man for the interviews, it would have been good to interview actual people acting in character. These people could even be preceptors that we are not familiar with so we can take them seriously."

Student Evaluation

Program Evaluation

- Self Efficacy
- Written Assessment before and after simulation
- Class evaluations from students
- Informal evaluations with preceptors for Clinical II in the hospitals

Self Efficacy

<table>
<thead>
<tr>
<th>Self-Efficacy Questions</th>
<th>P&lt;0.05</th>
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<tbody>
<tr>
<td>I feel comfortable providing Medical Nutrition Therapy for most diseases/conditions.</td>
<td>0.005</td>
</tr>
<tr>
<td>I feel confident in using oral and written communication in presenting an education or diet counseling session</td>
<td>0.015</td>
</tr>
<tr>
<td>I can remain calm and confident when facing challenges of communicating Medical Nutrition Therapy goals to other members of the health care team.</td>
<td>0.014</td>
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CONCLUSION

A clinical simulation curriculum increased students' SE in performing MNT. Simulation is a useful strategy that enhances MNT education. By involving preceptors in the simulation lab, simulation can help relieve overcrowded supervised practice sites and provide students with the MNT experiences they need in a monitored situation. It can also provide them with challenging experiences that they may not encounter during their limited time in a hospital.

MNT By Diagnosis.

- Deficient
- Marginal
- Expected level
- More than expected
- Exceptional
- Not observed
Course Content Methods

- Case Studies
- MNT Power Point presentations
- Patient simulated chart reviews
- Assessment sessions with SimMan
- One on One time with preceptors
- Education sessions with SimMan

Week – Cardiovascular Disease

- Monday: Nutrition Care Process I
- Tuesday: Nutrition Care Process II
- Wednesday: Nutrition Care Process III
- Thursday: Nutrition Care Process IV
- Friday: Integration and behavioral

- Pathophysiology
- Medical Diagnosis
- Medical Intervention
- Medications
- Assessment: Medical/Social History
- Nutritional History
- Physical Assessment
- Anthropometric Measurements
- Nutritional Diagnosis
- Medical Tests and Procedures
- Nutrition Therapy
- Weight Loss
- Sodium Reduction
- Therapeutic Lifestyle Change
- Communication Theoretical Foundations
- Education/Counseling
- Communication/Learning
- Use media

Future Directions

Where do we go from here? OSU

- OSU – Development of outcome measures for specific foundation skills
- OSU – Total integration within the curriculum

Where do we go from here?

- UI Additional Cases
- Explore Virtual Clinics in Second Life: