



## **Introduction of Computer Assisted Case Simulation in Nurse Practitioner Education**

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### **Computer Assisted Case Simulation**

#### Implementation Summary

One of the ever-present challenges in nurse practitioner (NP) education is providing each student with exposure to the key clinical scenarios he or she will be likely to encounter in practice. Due to the dynamic nature of the clinical arena, there is no way to assure that such exposure will occur in any given clinical placement. Additionally, the ever-expanding array of expected competencies must be achieved in a very limited number of clinical hours.

Another notable challenge in NP education is that the clinical faculty has limited opportunity for direct observation of the student in practice. The faculty is heavily reliant on the feedback of preceptors who are only peripherally involved in the formulation and application of program objectives. Such feedback varies considerably in terms of its specificity, comprehensiveness, and accuracy.

These challenges led us to explore technology solutions. We selected a product called DxR Clinician, a case simulation product created and offered by DxR Development Group, Inc. This product offered a potential mechanism both to expand our students' exposure to important clinical situations and to expand our own window into the students' clinical reasoning processes. This interactive software product simulates an actual clinical encounter. The student meets a "patient" with an instructor-selected medical issue. The student takes a history, performs a simulated physical examination, orders and interprets diagnostic tests and finally, must arrive at a diagnosis and formulate a treatment plan.

The case we chose was that of a young woman with abdominal pain. In addition to being a common primary care presentation, this case fit our needs uniquely in that it was applicable both in the pediatric and family programs currently offered at Regis College.

We included the DxR case as a graded requirement. To help minimize technology challenges for students in terms of using the program we posted a link to a tutorial a week before the assigned case was posted. The due date for the DxR case was carefully positioned to approximate the dates when related class content would be

complete.

In general, the feedback we received from students was positive. Many of the comments reflected an appreciation that the computerized case provided a very realistic simulation without the stress of an actual clinical encounter. The potential for actual harm to the patient being removed from the equation, they were able to focus solely on their own diagnostic process. A number of students commented that having done the DxR case was useful to them in subsequent encounters of actual clients and that their anxiety about caring for such clients was reduced. Our technology-savvy, often younger, students found the session not only informative, but fun. For this demographic, the technology seemed to be a natural fit. The flip side, of course, was that a number of students who were less comfortable with technology in general, expressed frustration with technical aspects of the program.

As faculty we found that the information provided by the DxR analysis was a welcome and valuable addition to the overall assessment of each student. The DxR analysis provided a percentage score that encompassed a score for the completeness of the data collection and a score for the clinical reasoning employed to reach a diagnosis. Beyond the score, however, what was particularly valuable to us as faculty was the description of how the student arrived at the diagnosis. It provided us with a process evaluation. For instance, it was not enough to arrive at the correct diagnosis, the diagnosis had to have been supported by the way in which the student gathered the data. This information provided us with new insight into each student's approach to the clinical visit and an opportunity to tailor instruction to help improve any given student's clinical performance. For instance, it would be clear from the analysis if the student were formulating a diagnosis prematurely, with insufficient data. In such cases the diagnosis would lead the inquiry instead of the inquiry leading to the diagnosis. As a process problem, this is something that can be corrected with proper awareness and instruction. Deficiencies in the knowledge base were also readily apparent by looking at the record of the encounter.

Implementation of computer assisted simulation holds promise in terms of expanding the content of the clinical experience in the nurse practitioner programs by providing the opportunity to enhance clinical competence in situations where the student has had limited practice exposure. One exciting aspect of using computer assisted case simulation is that the potential exists to give students exposure to some of the less common but critically significant diagnoses that they might not have an opportunity to encounter during their practicum.

The type of process evaluation that computer assisted case simulation makes available to faculty is significant in that it provides an additional perspective in the overall evaluation of the student. The information provided is different from that supplied by the objective testing and the written case studies that are already used in the program. In these methods of evaluation, we see the finished product, but not the thought process that created it. The information provided by DxR is exciting in that it allows us to provide focused intervention at an individual process level.