

# Differential Diagnosis

An Interactive Course for Health Care Providers to Practice the Diagnostic Process of Young Children

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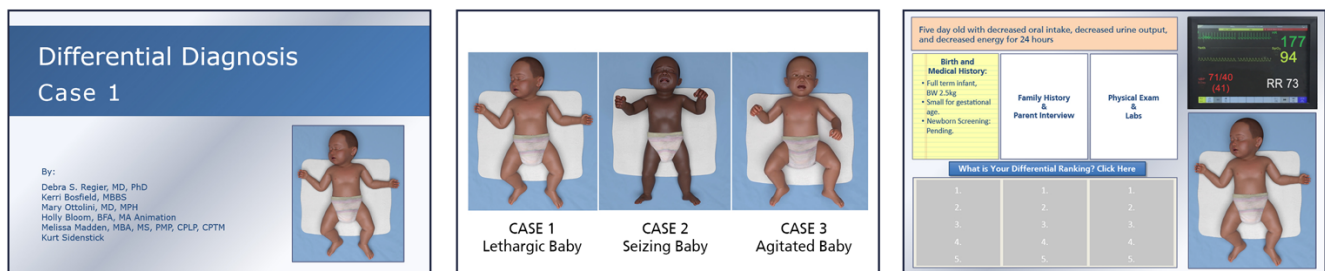


Figure 1: (left) Case 1 module title page (middle) The three case studies (right) Case 1 Introduction

## ABSTRACT

Children's National Hospital is a leading pediatric teaching hospital with medical students, residency programs, fellowships, and research initiatives. Children's National uses online e-learning in its training, including interactive courses with 3D animated virtual simulations. Infants and young children can be hard to diagnose since they cannot easily tell doctors where it hurts or what they are feeling. Thorough diagnosing is important because diseases may often resemble other issues. Medical trainees of all levels require practice in the process of forming a diagnosis through organized steps in information gathering via medical history, lab results, and physical exam findings. The creation of educational videos of ill infants pose unique problems since children cannot self-consent, have rapid decompensations from minute to minute, and video capture can put the infant at risk. For example, a videographer would need to be in close proximity to a small child and could lead to increased exposures or prevent the care team from giving timely care. In addition, children often present with only one or two findings and these expand with time. As we work to ensure diversity in education and learning, the ability to create cases with diverse

patient populations is important. While in a clinic setting, it is unethical to "allow" disease progression. Using 3D virtual simulation, the diagnostic process can be taught without risk to the patient.

## CCS CONCEPTS

• Applied computing; • Life and medical sciences; • Computing methodologies; • Modeling and simulation;

## KEYWORDS

Interactive Design, Virtual Simulation, E-Learning, Medical Training

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## 1 INTRODUCTION

The purpose of this study is to test the efficacy of an online multimedia immersive learning simulation to understand the knowledge, disease progression, and physical exam findings of acutely ill infants.

This course includes three case studies with differing symptoms, health states, and ethnicities. Students must examine patient history, family history, parent interviews, physical exams and labs, and

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