

**QBS Health Data Science
Capstone Opportunity
2018-2019**

Organization

The Dartmouth Institute for Health Policy and Clinical Practice at the Geisel School of Medicine at Dartmouth

Location:

Geisel School of Medicine at Dartmouth
One Medical Center Drive
Lebanon, NH 03756

Contact:

Rebecca T. Emeny, PhD, MPH
Rebecca.T.Emeny@Dartmouth.edu
1-603-653-0898

Summary of Project:

Hospital acquired pressure injuries (HAPIs) are a major source of unintended patient harm and unnecessary hospital costs. A targeted approach to prevent HAPI occurrence is a key part of high-quality patient care. The goal of this project is to further analyze an electronic health record (EHR) based dataset to predict pressure injury development with hospital encounter and patient specific factors. Findings will be used to target educational and direct care interventions to decrease the number of injuries at Dartmouth-Hitchcock Medical Center (DHMC). A long-term goal is to develop an EHR application embedded in the DHMC medical record system, EPIC, to allow for specific and meaningful real time risk analysis. That process could lead to better patient-specific prevention mechanisms. This project will focus on expanding and validating the findings from previously completed analyses by applying data mining and machine learning techniques. The intent is to build the knowledge around factors that relate to an increased risk of HAPIs.

This project will satisfy many of the required capstone competencies. Briefly, the project will include data extraction from electronic medical records, as well as statistical model evaluation and refinement. The analytical techniques used may include non-linear regression analyses, data mining, machine learning and predictive analytics. The student will collaborate with a physician, nurse researcher, and epidemiologist to complete the project, and there is the opportunity to be a coauthor on related publications.

Please contact Dr. Emeny (Rebecca.T.Emeny@Dartmouth.edu) for more information about this project.

Related research from this group:

1. Miller M, Emeny RT, Freed, G. Reduction of Hospital Acquired Pressure Injuries Using a Multidisciplinary Team Approach: A Descriptive Review. Accepted Wounds Sept, 24 2018
2. Miller M, Emeny_RT, Snide J, Freed, G. Patient Specific Factors Associated with Pressure Injuries Revealed by Electronic Health Record Analyses. Accepted **under revision** Health Informatics Journal Sept, 22 2018
3. Raju D, Su X, Patrician PA, Loan LA, McCarthy MS. (2015) Exploring factors associated with pressure ulcers: a data mining approach. International Journal of Nursing Studies. 52(1):102-11. doi: 10.1016/j.ijnurstu.2014.08.002

Rosemary A. White

From: Shaniqua A. Jones
Sent: Thursday, December 6, 2018 10:08 AM
To: Rosemary A. White
Subject: FW: Potential capstone opportunity
Attachments: Miller_Capstone_Opportunity_05Dec2018.pdf

Please add to the website.

From: Jennifer A. Emond <Jennifer.A.Emond@dartmouth.edu>
Sent: Thursday, December 6, 2018 10:04 AM
To: QBS Students <qbsstudents@groups.dartmouth.edu>
Cc: Shaniqua A. Jones <shaniqua.a.jones@dartmouth.edu>; Keith M. Drake <keith.m.drake@dartmouth.edu>; Todd A. MacKenzie <Todd.A.MacKenzie@dartmouth.edu>
Subject: Potential capstone opportunity

Please read the attached flier about a research opportunity for the capstone. It is a project here at Dartmouth. It includes analysis of electronic medical records that will likely require non-linear regression analyses, data mining, machine learning and predictive analytics.

The contact information is included if you are interested in applying.

Best,
Jennifer

Jennifer A. Emond, PhD, MS
Assistant Professor
Department of Biomedical Data Science
Geisel School of Medicine at Dartmouth College
Norris Cotton Cancer Center
One Medical Center Drive Hinman 7920
Lebanon, NH 03766
1-603-653-9168
Jennifer.A.Emond@Dartmouth.edu
<https://geiselmed.dartmouth.edu/faculty/facultydb/view.php?uid=6170>