



## Using Data Science to Create Sustainable Learning Opportunities for DNP and Graduate Nursing Students

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## Impetus for Collaboration: Duke School of Nursing (DUSON)

- BSN to DNP Student Scholarly Projects
- Sites and ideas for Projects
- CRNA program move to DNP exit in 2016
  - Unique needs: finding project ideas and site related to surgical care
  - Timetable for project and high clinical hours requirement (2000+)

## Setting: Grey's District Hospital

- Public Tertiary Health Care Hospital: serves 5 health districts and population of 4.5 million
- Umgungundlovu Health District
- 530 Beds
- 8,678 surgeries (2016)



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## Impetus for Collaboration: University of KwaZulu-Natal

- High trauma burden in South Africa
- Hybrid Electronic Health Record built by trauma surgeons
- Need for increased knowledge/skills in QI and data analytics



The design, construction and implementation of a computerised trauma registry in a developing South African metropolitan trauma service

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World J Surg  
DOI 10.1007/s11605-014-2764-x

Using a Hybrid Electronic Medical Record System for the Surveillance of Adverse Surgical Events and Human Error in A Developing World Surgical Service

Grant Laing · John Bruce · David Skinner ·  
Sikal Alberts · Colleen Aldous · Sandle Thomson ·  
Dorcas Clarke

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## Mutual benefit

- Secondary data analysis to:
  - Identify patient outcomes that could benefit from QI initiatives
  - Serve as DNP Scholarly Projects
  - Identified QI priorities could be used as projects for U-KZN graduate nursing students in country
- 3 aims of project:
  - Determine incidence of post-trauma pulmonary complications (PTPC)
  - Describe the relationship between trauma surgical interventions and the occurrence of PTPC for different types of trauma surgeries
  - Identify EBP recommendations to reduce risk for PTPC

## DNP Essentials

- IV: Information Systems/Technology and Patient Care  
Technology for the Improvement and Transformation of Health Care
- III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice
- VI: Inter-professional Collaboration for Improving Patient and Population Health Outcomes

## Planning for Student Project Structure

- Faculty with:
  - Secondary data analysis expertise
  - Clinical expertise (critical care/trauma)
- Team Project: 3 students for each trip
  - 1<sup>st</sup> cohort: 3 CRNA students
  - 2<sup>nd</sup> cohort: 2 CRNA Students, 1 post-masters Acute Care NP
  - 3<sup>rd</sup> cohort: 3 CRNA Students
- Travel to South Africa in 4<sup>th</sup> semester of DNP course work

## Objectives of trip to Durban, South Africa

- SON Faculty travel with students
- Visit Grey's Hospital and meet with creators of HEHR
- Development of data dictionary to meet project aims
- Queries regarding uncertain data fields
- Better understanding of care milieu, challenges
- Health care system resources
- Cultural activities

## Collaborative Activities

- Day Long Workshop at U-KZN: “Using Data Science to Effect Health Care Changes”
- Collaborative activities with U-KZN faculty, students and staff regarding data analytics for QI
- Results of first data analysis basis for QI projects that would reduce PTPC at Gray’s Hospital
- Faculty travel

## Preparation for trip and post-trip

- Scholarly Project proposal developed and approved
- Successful proposal defense
- Data coding activities
- Data analysis
- Manuscript development

## IRB Concerns

- All data is de-identified, no patient identifiers
- Ethics Approval by Biomedical Research Ethics Committee of University of KwaZulu-Natal
- Duke University Health System IRB exemption

## Support for Global Student Projects

- DUSON Office of Global and Community Health Initiatives (OGACHI): MOU
- Student registers for N974 DNP Scholarly Project Global
- Academic Fee attached to course to pay for student travel expenses
- OGACHI makes travel arrangements, pre-trip logistics meetings and cultural humility guidance
- Pre-trip required readings

## Scholarly Activities from Collaboration

- Pereira, K., Goode, V., Brysiewicz, P. (2019). Using clinical data to effect practice change. *International Emergency Nursing*, 46.  
<https://doi.org/10.1016/j.ienj.2019.100809>
- Manuscript submission peer reviewed journal
- Conference presentations:
  - Trauma Society of South Africa 2<sup>nd</sup> National Cape Town International Conference, 2019
  - AACN Doctoral Conference, Naples, FL, 2020.



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# Conclusions

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