Innovation Identified

NYUSoM has created **NYU Health Care by the Numbers (HCBTN)**, a flexible three-year, individualized, technology-enabled blended curriculum to train medical students in using big clinical data to improve care coordination and care quality. HCBTN emphasizes the use of big data and technology for patient and population management and empowers students to answer important clinical questions at the health care system-level.

The foundation of the curriculum is the use of real clinical data, which are derived from de-identified patient data gathered from NYU Langone’s physician network practices and government-provided open data sources. These panels immerse students in the “big clinical data” of our health care system - from the **2.5 million patients admitted each year** to New York hospitals to the individual patients seen in our outpatient clinics.

Need/Gap Addressed

The goal of the NYU Health Care by the Numbers curriculum is to prepare our graduates to meet the future needs of the ever-evolving healthcare delivery system by giving them the tools and skills necessary to care for not just an individual patient, but for an entire population of patients. Specifically, we expect our medical students to:

- Develop skills to examine data across panels of patients,
- Recognize the strengths and pitfalls of big clinical databases, and
- Demonstrate the skills of using large clinical datasets to answer a clinical questions and improve care, quality, and the health care system

Project Description

**HCBTN Resources:**
- NY Statewide Planning and Research Cooperative System (SPARCS) dataset created specifically for the students:
  - All-payer data on 5 million patients discharged in all 227 NY hospitals in 2013 and 2014
  - Patient-level records including demographics, DRG codes, procedures, charges, length-of-stay, and more

**Student Projects:**
- Students work in pairs to identify and investigate a clinical question using SPARCS data
  - Literature search, data description, cross-tabulations, and graphical visualizations
  - Students refine their hypothesis with a medical librarian and faculty preceptors
  - Faculty consultations are available for students in biostatistics, informatics, health care systems
- Students submit a structured abstract and deliver a 15 minute presentation to the class

Project Evaluation

- Medical librarian and faculty experts provide formative feedback on the feasibility and quality of clinical questions
- Faculty preceptors and peers provide formative feedback on student presentations and abstracts
- Common themes across student projects are identified

Outcomes

- To date, more than 500 NYU Medical Students have answered over 300 clinical questions
- Sample student questions:
  - Does day of admission correlate with length-of-stay for CHF?
  - Does severity of illness score correlate with length-of-stay for patients with Drug and Alcohol dependence?
  - How does hospital level case-load relate to length-of-stay for those undergoing hip replacement?
  - Does a patient’s race impact the rate of cardiac catheterization among patients admitted admitted with acute MI?

Curriculum and clinical data are freely available at: [http://ace.iime.cloud](http://ace.iime.cloud)