# **Digital Transformation of Healthcare**

Course Overview

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### **Digital Transformation of Healthcare**

- Healthcare Informatics
  - The management and use of patient healthcare information driven by insights gained using health information technology
  - The goal is to provide higher quality care (lower cost, greater availability, new healthcare opportunities) to our patients
- Course Objectives
  - Design healthcare informatics projects
  - Develop questions answerable by current systems
  - Estimate the value of a project prior to its implementation
  - Evaluate results from research, economic, and institutional stakeholder perspectives

#### **Course Overview**

- Lecture format
  - Each class will focus on a specific part of the pipeline
  - Explore theoretical constructs through discussion and small group work
  - Compare with practical implementations
- Final Project
  - Teams of X students will present an informatics project to the class at the last lecture
- Grading
  - Class is Pass/Fail
  - Grade is based on participation and final project
- Course Leaders
  - Michoel Snow msnow1@montefiore.org
  - Glen Ferguson glfergus@montefiore.org

#### Lecture Schedule

- 1. Overview and Introduction to pipeline
- 2. Clinical Decision Support
- 3. Machine Learning Models
- 4. Evaluating Predictions
- 5. Mobile Health/IOT
- 6. Cohort Selection
- 7. Healthcare Economics
- 8. Administrative Healthcare Databases
- 9. Ethics of Healthcare Informatics
- 10. Exploratory Analysis
- 11. (A Gentle) Deeper Dive into Neural Networks
- 12. Presentations

## **Any Questions**



#### **Objectives**

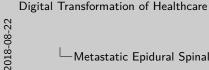
After this lecture students will be able to

- Describe the different phases of a healthcare informatics project
- Diagram an informatics project as a pipeline

- Overview
  - Occurs in 2% to 5% of all cancer patients
  - Cord compression is the first manifestation in about 20% of patients
  - Survival is generally less than 6 months
  - Prognosis negatively correlates with severity of presenting symptoms
- Diagnosis
  - Clinical Findings + Imaging (MRI or CT)
- Treatment
  - Surgery
  - Radiation therapy

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Let's build our own pipeline for spinal cord compression



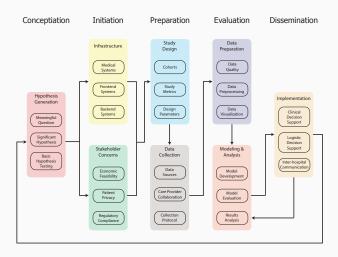
Metastatic Epidural Spinal Cord Compression

- . Occurs in 2% to 5% of all cancer patients . Cord compression is the first manifestation in about 20% of patients . Survival is generally less than 6 months
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- · Treatment
  - · Surgery · Radiation therapy

Let's build our own pipeline for spinal cord compression

1. First let's talk about the 4 to 5 basic steps in our pipeline, and then we'll break each step down into 1 to 3 sub-steps, and then discuss the components of the individual sub-steps. The first two parts we'll do together as a group and the last part you will work on in teams

#### **Healthcare Informatics Pipeline**



#### Initial Steps

- Question
  - Question
  - Cord Compression is the first manifestation in about 20% of patients
  - Survival is generally less than 6 months
  - Prognosis negatively correlates with severity of presenting symptoms
- Exploratory Analysis
  - Clinical Findings
  - Imaging (MRI or CT)