CBB 7400 Study Guide

1. Overview
   - Key aspects of information management for health informatics
   - Scope of health informatics
   - Motivating factors for health informatics development

2. Healthcare Data Overview
   - Know the Data, Information, Knowledge, Wisdom Hierarchy and be able to provide an example for each stage
   - Know the difference between data and metadata
   - Describe the difference between structure and unstructured data
   - Be able to describe the 5 major data quality attributes from slide 42-48

3. Data Standards (Part I)
   - Know the four major types of methods by which standards arise (if the process of making a standard is described, be able to label it, you do not need to know how current standards were derived).
   - Know the names of primitive data types
   - Know that ICD-10 codes are used for disease classification and the general composition of codes (image, bottom right of slide 15)
   - Know the difference between a terminology and a nomenclature
   - Know the difference between semantic and non-semantic codes
   - Know the difference between pre-coordinated and post-coordinated terms

4. Data Standards (Part II)
   - Standards integrated by UMLS
   - Purpose of HL7
   - Underlying technologies of FHIR

5. Database Systems
   - Know the differences between a navigational and relational database
   - Know the difference between a tuple, and attribute and a relation

- Know what each of the ACID guarantees describes

6. Networks
    - Layers of network models
    - Topologies of networks
    - Architectures of networks

7. Health Data Security
    - Elements of information security
    - Defending methods against security risks
    - Types of data in terms of PHI

8. Electronic Health Records (Part I)
    - Know the 5 categories of people in Rogers Diffusion of Information
    - Know which act promoted the adoption of EHRs through stages of meaningful use
    - Know which stage incentivized health information exchange

9. Electronic Health Records (Part II)
    - No specific items here (virtual field trip)

10. Clinical Decision Making and Analysis
    - Be able to differentiate anchoring bias, representativeness bias, availability bias, value bias
    - Describe the difference between a treatment and testing threshold and how it might change depending on the disease and test in question
    - Be able to describe and calculate Quality Adjusted Life years from a health timeline

11. Clinical Decision Support (Part I)
    - Know the 5 rights of CDS
    - Describe the Swiss cheese model of medical errors

12. Clinical Decision Support (Part II)

- Be able to describe some of the common triggers for CDS and what sort of information might be best suited for each.
- Describe the downsides of using an interruptive alert

13. Research Informatics (Part I)
- Thematic issues of CRI
- Implementation models and frameworks
- Designs for implementation science