1. [BRENNAN] Over the past 25 years the US has experimented with many different ways to organize health services to improve quality and reduce costs. The current framework, Accountable Care Organizations, are similar but not identical to Health Maintenance Organizations. ACOs hold large health care organizations like hospitals responsible for the cost and outcome of services to specific patients. Risk management is important, as is careful tracking of costs.

Industrial engineers use models and data to help decision makers chose courses of action. Briefly describe the differences between a traditional large hospital, like a medical center, and an ACO. Then identify and explain four characteristics of ACOs that pose unique challenges to industrial engineers as they try to help administrative decision makers.
2. [MENDONCA] Healthcare delivery relies intensively in information and a set of processes. Several scientific studies and reports from the Institute of Medicine suggest that better clinical documentation improve quality of care. Accurate financial and administrative information is essential for supporting operational tasks and strategic planning. Coding systems play an important role in providing data for some of these processes. Despite the lack of a unique definition for many medical terms, some terminologies are widely used.

The World Health Organization publishes a diagnostic coding scheme called the International Classification of Disease (ICD). The 10th revision of this standard (ICD10) is currently in use in much of the world. In the United States a previous version with some revision (ICD-9 Clinical Modifications) is currently used in most hospitals. ICD9-CM codes are assigned to every diagnosis and procedure listed on healthcare encounters and used for multiple purposes. Examples are: 1) used to support alerting systems; 2) utilized for compulsory reporting of healthcare quality by the Agency of Healthcare Research and Quality (AHRQ) for their Patient Safety Indicators; 3) utilized to identify patients in quality improvement studies; 4) Meaningful use reporting.

The transition to ICD-10 is required for everyone covered by the Health Insurance Portability Accountability Act (HIPAA). By October 1, 2015 healthcare providers should transition to ICD-10.

Discuss the challenges and the potential impact of the transition to healthcare institutions and providers. You may want to consider the aspects related to healthcare processes, to the use of health information systems, to proper documentation of healthcare delivery, to accurate reporting purposes, as well as preparedness of the healthcare teams.
3. [ALAGOZ] Please answer the following three questions. Please justify your responses.

(a) Suppose you are asked to conduct a cost-effectiveness analysis and calculated the incremental cost-effectiveness ratios for the programs under consideration. What would be the benefit of conducting a probabilistic cost-effectiveness analysis over 1-way, 2-way or 3-way sensitivity analyses? That is, why would you consider to do a probabilistic cost-effectiveness analysis?

(b) What is the rationale for discounting future life years in a cost-effectiveness analysis?

(c) Discuss the pros/cons of using disease-specific utility tools over generic utility tools such as EQ-5D in measuring the utility of a patient.
4. [CARAYON/WERNER] Health information technology is often seen as a major solution for improving healthcare quality, patient safety and access to care services. However, evidence is mounting of problems associated with technologies that are poorly designed and implemented. Propose a human factors-based design process that can address some of these issues.

You can focus your question on one specific patient population (e.g., diabetic patients), one specific care process (e.g., care transition or medication process), or one care setting (e.g., home, emergency department). You could also focus your answer on one type of issue, e.g., medication safety or access to primary care services.