Question 1:
According to the hierarchy of effectiveness, which of the following mitigation strategies is most likely to improve patient safety and quality?
   a) Education and Training
   b) Checklists and Double Checks
   c) Automation and Forcing functions
   d) Simplification and Standardization

Answer: C
Feedback:
The hierarchy of effectiveness is a human factor concept that helps us categorizes error prevention strategies broadly as more effective (system orientated) and less effective (human orientated). Education and Training are the least effective at improving patient safety. Automation and forcing functions are the most effective.

Location: Slide title: Hierarchy of effectiveness
Reference:

Question 2:
Traditionally, safety improvement in our specialty has been driven by:
   A. Prospective error management as described by TG 100
   B. Congress
   C. Chance
   D. Reactive responses to past system failures

Answer: D
Feedback:
Quality improvement activities in radiation oncology are reactive to new technological advances, both at their time of implementation and as mandated or recommended by professional organizations and regulators. However, many quality improvement activities are also implemented in response to unanticipated system failures after clinical implementation. Thus, it appears that the traditional pre-implementation prescriptive approaches alone to ensure quality and safety are not adequate. This traditional approach alone often does not address the huge variety of process and technique used in radiation oncology.

Location: Slide Titles: “Quality Assurance/Quality Management in Radiation Oncology”
Reference:
Question 3:
What is the purpose of performing FMEA?
   a) To establish the probability for each of the ways things could go wrong.
   b) To find the failure modes with the PRN in the highest 10% so they can be addressed and resources saved from being wasted on the rest.
   c) To develop an understanding for the relative risks from all the various potential failure modes.
   d) To have all team members come to agreement on the risks for each process step.

Answer: C
Feedback:
The risk-based approaches typically entails a four-step process: mapping a clinical process to understand the process, performing a failure modes and effects analysis (FMEA) on that process to understand the risks, fault tree analysis (FTA) to understand how failures propagate, and followed by addressing the risks with systemic changes. The AAPM task group report (TG 100) suggests that radiotherapy processes at an institution should be analyzed using this approach to develop a prospective quality management program.

Location: Slide Title: “TG 100 Methodology”
Reference:

Question 4:
Which is true regarding the Task Group goals for standardized nomenclature?
   a) Improve safety through better communication
   b) Improve consistency in naming to improve ability to pool multi-institutional data
   c) Improve ability to use automated programs to mine data
   d) All of the above

Answer: D
Feedback:
The radiation oncology community has long suffered from a lack of standardization around the various nomenclatures applied to targets, normal tissue structures, and treatment planning concepts and metrics. Such nonconformity hinders safety and quality efforts within and between clinics for routine ongoing practice, and introduces challenges in pooling data for outcomes research, registries and clinical trials. Increased clarity and consistency through standardizing nomenclatures in these areas would have broad benefits in these areas.

Location: Slide Titles: “Task Group Goals for Standardized Nomenclature”
Reference:
Question 5: From the guidelines, which is incorrect naming for a target structure?

a) GTV1  
b) PTV_7200  
c) Prostate  
d) CTV_ProstateBed

Answer: C

Feedback:
The nomenclature needs to be operable on the widest possible range of systems used in radiation oncology. This requires consideration not only of treatment planning systems and treatment management systems but also of systems used for transmission of data (e.g. XML, JSON, DICOM), and of standard software methods (e.g. regular expression) used for automated computer extraction of data elements from character strings. TG 263 limits the nomenclature to strictly alphanumeric characters with only a few specifically allowed characters (e.g. underscore) to be flexible across multiple platforms.

Location: Slide Titles: “Naming Guidelines”

Reference: