CPHQ Practice Questions

CPHQ Practice Test & Exam Review for the Certified Professional in Healthcare Quality Exam

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Practice Test

Practice Questions

1. According to the Institute of Medicine, which of the following is NOT one of the domains of quality care?
   a. Government regulation
   b. Customization
   c. Safety
   d. Interventions consistent with the latest medical findings

2. Which of the following groups is least likely to report errors?
   a. Primary care physicians
   b. Support staff
   c. Independent contractors
   d. Nurses

3. Which of the following is NOT one of the types of quality problems identified by the Institute of Medicine’s National Roundtable on Health Care Quality?
   a. Misuse
   b. Abuse
   c. Overuse
   d. Underuse

4. In behavioral health, the most important sentinel event for root cause analysis is...
   a. Discharge
   b. Death
   c. Recovery
   d. Medication error

5. It is easy to conduct a survey of medication-related errors because...
   a. There are very few of them relative to other types of error
   b. Deaths caused by such errors are rarely discovered
   c. Such errors have small but noticeable effects on health care costs
   d. Prescription-drug use is common and well documented

6. In a successful lean healthcare facility, the largest costs related to quality will be incurred by...
   a. Preventive efforts
   b. Internal failures
   c. Assessment programs
   d. External failures
7. When is the best time to discuss the results of a meeting exit survey?
   a. Immediately upon receiving the responses
   b. At the beginning of the next meeting
   c. Via email in the interim before the next meeting
   d. These results should not be discussed

8. Whenever possible, medication orders should be by...
   a. Weight
   b. Volume
   c. Dose
   d. Strength

9. What is the best explanation for the relatively slow introduction of lean practices into medical laboratories?
   a. The variability and complexity of the samples in a laboratory is much higher than in a manufacturing environment
   b. Scientists are less receptive to the core principles of lean
   c. Medical laboratories function differently than factories
   d. Medical research is mostly funded by the government

10. A simple but effective way for managers to obtain the support of team members is to...
    a. Threaten punishment
    b. Ask for it
    c. Mandate it
    d. Ignore the team members

11. A delay in discharging patients is likely to cause recurrent bottlenecks in...
    a. Admissions from the emergency room
    b. The filling of prescriptions
    c. Admissions from surgical wards
    d. All of the above

12. Which of the following conditions should a quality assessment program NOT examine?
    a. A condition that is thought to be treatable
    b. A condition for which the treatment is susceptible to significant influence by health care providers
    c. A condition that has cost-effective treatments
    d. A rare condition that has a small effect on mortality or morbidity

13. A doctor fails to administer an indicated test, and the patient’s condition deteriorates to the point that he must be admitted to an inpatient facility. This is an example of...
    a. Preventive error
    b. Treatment error
    c. Diagnostic error
    d. Communication error
14. When is the best time for chairing during a meeting?
   a. One hour beforehand
   b. At the beginning
   c. In the middle
   d. At the end

15. Which of the following does NOT contribute to evidence-based practice in healthcare?
    a. Clinical expertise
    b. Evidence collected by expert panels
    c. Tradition
    d. Patient preferences

16. Which of the following is vastly different from the others?
    a. SIPOC
    b. DMAIC
    c. PDCA
    d. PDSA

17. In the perfect lean enterprise, delivery to the customer is...
    a. Instantaneous
    b. Rapid
    c. Customizable
    d. Optional

18. A presentation on the basic structures and processes of clinical governance would be most useful...
    a. For small teams of employees
    b. For the organization as a whole
    c. For the directorate
    d. For individual employees

19. A hospital-wide set of professional standards is important because it...
    a. Reduces the waste of time and resources
    b. Eliminates bottlenecks
    c. Encourages duplication
    d. Minimizes the need for communication

20. What is one disadvantage of the visioning strategy for setting goals?
    a. It isolates team members
    b. It tends to bring internal conflicts to the surface
    c. The group must have at least six members for it to be feasible
    d. It tends to reinforce group norms

21. Before conducting a safety audit in an emergency department, an administrator must first obtain...
    a. A list of the employees in that department
    b. A map of the department
    c. A written set of safety standards
    d. Statistics on adverse events
22. During a meeting, the facilitator notices that one of the participants is getting agitated. After the meeting, what would be the best question for the facilitator to ask the participant?
   a. “Why are you so angry?”
   b. “What didn’t you like about the meeting?”
   c. “Were you feeling irritated during the meeting?”
   d. “Don’t you hate it when your coworkers act that way?”

23. The process chain in a laboratory is particularly subject to...
   a. Variability
   b. Delay
   c. Disorganization
   d. Conflict

24. Research suggests that the largest proportion of adverse events attributable to negligence occur in the...
   a. Post-trauma unit
   b. Surgery unit
   c. Maternity ward
   d. Emergency room

25. Which of the following is the source of the most medication errors?
   a. Orders that require lab results
   b. High-risk orders
   c. Automatic orders
   d. Verbal orders

26. Which of the following is NOT one of the typical questions in a force-field analysis?
   a. “What do you hope to accomplish in the meeting?”
   b. “What was bad about the meeting?”
   c. “What was good about the meeting?”
   d. “How can we improve meetings in the future?”

27. The definitive proof of the success of a regulation program is...
   a. Fewer complaints from customers
   b. A decreased need for inspections
   c. A boost in employee morale
   d. An increase in throughput

28. A hospital manager notices that a significant proportion of medication errors in the facility involve the same two drugs. What is the most likely cause of this?
   a. The drugs are widely available
   b. The drugs are made by the same company
   c. The drugs come in similar packaging
   d. The drugs are habit-forming
29. One advantage of the kaizen approach to DMAIC implementation is that...
   a. It replicates the project-team approach
   b. All of the team members are involved in all phases of the process
   c. It can be performed while employees complete their normal tasks
   d. It is accomplished in about a week

30. The practice of waiting for a certain number of samples before commencing a test run results in...
   a. Fewer bottlenecks
   b. More bottlenecks
   c. Shorter lead times
   d. Longer lead times

31. A whole systems approach to clinical governance is important because...
   a. It isolates particular areas of concern
   b. It can be administered within one week
   c. Changes must be applied at all levels of the organization
   d. Delays in service provision are rare

32. Because of a doctor’s poor handwriting, a prescription must be reworked before it leaves the pharmacy. Which of the following is true?
   a. The doctor should be reprimanded
   b. The pharmacy should incorporate bar coding
   c. The prescription should not count towards the pharmacy’s yield
   d. The error should be reported to the FDA

33. A hospital manager finds that he is unable to effectively supervise all of the employees who report directly to him. A reorganization of the hospital hierarchy should...
   a. Eliminate some of the subordinate employees
   b. Reallocate material resources
   c. Minimize the manager’s span of control
   d. Call for the hiring of another manager

34. Hospitals that implement computerized provider order entry (CPOE) almost always see a decline in...
   a. Medication errors
   b. Diagnostic errors
   c. Adverse events
   d. Latent errors

35. In a traditional meeting, the timekeeper and the minute-taker roles are...
   a. Filled by different people every time
   b. Filled by the same person
   c. Filled by the same two people in each meeting
   d. Filled by employees who are not required to participate in the meeting
36. An adverse drug reaction can be best described as...
   a. An unforeseen side effect of the administration of a drug
   b. The interaction of one drug with another drug being administered at the same time
   c. Harm that occurs during or after the administration of a drug
   d. Harm that occurs as a result of the administration of a drug

37. A meeting of department managers is discussing the catering service and menu for a hospital-wide special occasion. This decision should be made by...
   a. Building a consensus
   b. Voting
   c. Fiat
   d. Brainstorming

38. Confronted by excessive WIP levels, many laboratories take the unhelpful step of...
   a. Decreasing the number of test runs
   b. Acquiring a larger laboratory
   c. Hiring more employees
   d. Installing new technology

39. When establishing a clinical-governance training program for the directorate, it is useful to...
   a. Align the subject matter with the specific tasks of the audience
   b. Eschew case studies
   c. Emphasize the basic concepts of clinical governance
   d. Customize instruction for each person

40. In the lean enterprise model, what is the first step toward improving quality?
   a. Establishing performance metrics
   b. Reviewing product design
   c. Understanding the expectations of the customer
   d. Identifying potential defects

41. Time available divided by time available and time required is the Six Sigma ratio for...
   a. Productivity
   b. Dependability
   c. Customer satisfaction
   d. Selectivity

42. When prescriptions are being prepared, the labeling process begins at the same time as the medication is being packaged. However, the labeling does not take as long as the packaging. This difference in time does not add to the overall duration of the prescription-filling process. This is an example of...
   a. Just-in-time manufacturing
   b. Slack time
   c. Mistake proofing
   d. Inherent process variation
43. A hospital manager operates on the assumption that his employees will thrive when they are given responsibility and the opportunity to perform well. The manager's beliefs are aligned with...
   a. The theory of constraints
   b. Theory X
   c. Theory Y
   d. Theory Z

44. Which of the following steps should be taken before QA activities begin?
   a. Responsibility should be shared
   b. The principals should be informed
   c. Resources should be pooled
   d. The scope of involvement should be identified

45. The protocol for ordering a medication should be...
   a. The same every time
   b. Customizable
   c. Adaptable to verbal or written situations
   d. Dependent on inventory

46. Because the hospital is busy, an anesthesiologist is given less time than usual to examine the infusion device that will be delivering medication to a patient during surgery. The machine malfunctions and the doctors on hand must work feverishly to save the patient's life. This is an example of...
   a. Active error
   b. Equipment error
   c. System error
   d. Latent error

47. In a typical hospital, approximately what percentage of errors is reported?
   a. Less than 5
   b. Between 25 and 50
   c. 75
   d. Between 80 and 90

48. A behavioral health specialist notices a particularly high number of restraint deaths at a facility. An analysis of the root causes of these events is most likely to indicate problems with...
   a. Equipment
   b. Staff orientation and training
   c. Staffing levels
   d. Alarm systems

49. A good meeting facilitator will...
   a. Not need to ask very many questions
   b. Focus on process rather than content
   c. Refrain from offering suggestions
   d. Focus on content rather than process
50. During the periods with the highest incoming workload, a laboratory that has not implemented lean practices is likely to have...
   a. Substandard lead time performance
   b. Diminished productivity
   c. False positives
   d. Selective engagement errors

51. As much as possible, medications should be standardized. However, when this is impossible, it is important to...
   a. Assume that side-effects will occur
   b. Warn clinicians about the potential for overdose
   c. Only use them as a last resort
   d. Differentiate them clearly

52. Individual instruction on clinical governance is most effective when...
   a. It is delivered to a group
   b. It is delivered before a performance review
   c. It is combined with targeted training
   d. It is targeted at new employees

53. When establishing an incentive program for employees, the critical-to-quality parameters should be...
   a. Agreed upon by all participants
   b. Attainable and significant
   c. Determined while the program is underway
   d. Established by the senior administrator

54. A hospital uses the same labels for all of its prescriptions, but these labels do not fit on the smallest container, so employees must cut and paste the labels in a special way in order to fill the prescription. This is an example of...
   a. Overproduction
   b. Queuing
   c. Work-in-progress
   d. Extra processing

55. The discharge department of a hospital is at optimal efficiency when it completes the discharge process...
   a. More often than customer requests occur
   b. At about the same rate as customer requests occur
   c. Less often than customer requests occur
   d. Twice as fast as customer requests occur

56. When a hospital official notes that most errors are occurring at the “sharp end,” he means that...
   a. They involve surgical tools or knives
   b. They occur in clusters
   c. They occur during the interactions between caregivers and patients
   d. They are more likely to occur during busy periods
57. During a meeting, the facilitator must intervene several times to stop disputes between participants. Is this appropriate?
   a. Yes, but the facilitator should stay in the background unless the progress of the meeting is threatened
   b. Yes, the facilitator should rule in favor of one participant
   c. No, the facilitator should never intrude upon a meeting
   d. No, the facilitator should leave this duty to the chairperson

58. Which of the following procedures is NOT a good way to mitigate injury?
   a. Maintaining a ready supply of antidotes to high-risk medications
   b. Simulation training
   c. Programming equipment to shut off in the event of a crisis
   d. Requiring employees to practice crisis response

59. The first and most important step in a disclosure conversation is...
   a. Assessing the patient's mood
   b. Admitting error and apologizing
   c. Discussing the root cause analysis
   d. Compensating the patient

60. Which of the following factors is NOT included in a calculation of risk priority number?
   a. Severity of possible adverse effects
   b. Effectiveness of controls
   c. Likelihood of an adverse effect
   d. Cost of controls

61. One consequence of the implementation of Lean Six Sigma practices in a hospital will be...
   a. Reduction in inventory
   b. The creation of systems for verifying orders
   c. Reduction in staff
   d. Reduction in manufacturing costs

62. A program for assessing the validity of rolled throughput yield calculation is called...
   a. Composite clinical indication
   b. Performance measure selection
   c. Continuous quality management
   d. Measurement systems analysis

63. The general intent of the PDSA cycle is to...
   a. Optimize a process
   b. Reduce bottlenecks
   c. Incorporate new technology
   d. Automate processes
64. What are the three dimensions of quality in the most common framework for quality assessment?
   a. Service, process, and mortality
   b. Structure, process, and outcomes
   c. Population, structure, and satisfaction
   d. Function, outcomes, and clinical status

65. One common model for administrative meetings is for small groups to discuss specific problems and then join together in a...
   a. Process intervention
   b. Confab
   c. Colloquium
   d. Plenary

66. One characteristic of the SOAP model for medical records is...
   a. The inclusion of both subjective and objective data
   b. The lack of a prognosis
   c. The focus on therapeutic intervention
   d. The absence of a differential diagnosis

67. A top-level administrator is asked by a lower-level manager to lead a meeting of new employees. What should the administrator do first?
   a. Review the notes from previous meetings
   b. Discuss the meeting participants with the manager
   c. Organize preliminary notes
   d. Compose an introductory statement

68. A root cause analysis of inpatient suicides would be most likely to discover problems with...
   a. Staffing levels
   b. Staff orientation
   c. The physical environment
   d. The availability of information

69. A hospital’s medication system is vast, and various elements of it fall within the purview of several different departments. One important step towards reducing errors in this system is to...
   a. Make each department responsible for the system as a whole
   b. Have each department use the same self-assessment tools
   c. Give a single person responsibility for overseeing the entire system
   d. Simplify it

70. After numerous staff meetings, a hospital administrator notices that one of his subordinates is an excellent content leader. Which of the following would the subordinate be most likely to do?
   a. Suggest amendments to the meeting agenda
   b. Establish a tone of collegiality
   c. Enforce rules of conduct during the meeting
   d. Introduce new tools for examining data
71. Why would a hospital include an APACHE III score on an analysis of the infection rate?
   a. To indicate trends related to age
   b. To link infection with socioeconomic status
   c. To find areas of resource waste
   d. To establish the general likelihood of infection for patients with various conditions

72. As part of the implementation of lean practices, a laboratory categorizes activities as either “value-add” or “non-value-add.” What should be done with “non-value-add” activities?
   a. They should be minimized or, if possible, eliminated
   b. They should be eliminated
   c. They should be combined
   d. They should be synchronized

73. According to JCAHO, the primary cause of wrong-site surgery errors is...
   a. Unusual patient characteristics
   b. The necessity of multiple surgeries
   c. Communication failure
   d. The presence of multiple surgeons

74. A hospital uses infusion pumps to deliver intravenous medications. However, these pumps occasionally malfunction, so a nurse is assigned to periodically monitor their operation. Is this a good strategy?
   a. No, because it depends on the vigilance of one employee
   b. No, because it will distract the nurse from her other duties
   c. Yes, because it makes one person directly responsible
   d. Yes, because it gives the nurse a clear directive

75. One way to create useful alignment in an organization is to...
   a. Base the assessment of each department on the same set of performance dimensions
   b. Have each employee report to a single manager
   c. Eliminate adverse drug events
   d. Organize interdepartmental meetings

76. Which of the following is NOT mandatory in a generic dispensing program?
   a. Active ingredient must be the same
   b. Chemical composition must be the same
   c. Salt form must be the same
   d. Dosage form must be the same

77. If administrators are given a list of the variables that predict mortality for patients with a given condition, they should be able to...
   a. Reduce the number of deaths
   b. Eliminate wasteful therapies
   c. Create a formula for the risk of death for each patient
   d. Reduce bottlenecks in the emergency room
78. If an at-risk patient is left unattended and has an adverse response to medication, this is known as a(n)...
   a. Sentinel event
   b. Initiator
   c. Latent outcome
   d. Slip

79. One important driver of customer dissatisfaction in health care over the past decade has been...
   a. The introduction of online services
   b. The lack of communication between physicians and patients
   c. The rise in income inequality
   d. The improvement of customer care in other service industries

80. Which of the following is most important?
   a. Patient satisfaction
   b. Clinical satisfaction
   c. Employee satisfaction
   d. Patient, clinical, and employee satisfaction are equally important

81. The minimum practical lead time for an analytical laboratory is...
   a. The release constraint test time for the microbiology lab
   b. Greater than the release constraint test time for the microbiology lab
   c. Less than the release constraint test time for the microbiology lab
   d. Unrelated to the release constraint test time for the microbiology lab

82. Which of the following contracts would be most appropriate when remodeling an old wing of a hospital?
   a. Formal contract
   b. Time and materials contract
   c. Cost reimbursement contract
   d. Fixed price contract

83. In the optimal decision-making process, the most time will be devoted to...
   a. Framing the question
   b. Learning from feedback
   c. Drawing conclusions
   d. Gathering information

84. In lean enterprise, which is the worst type of waste?
   a. Extra processing
   b. Queuing
   c. Transport
   d. Overproduction

85. Team paralysis is NOT a common result of...
   a. Rigid adherence to meeting protocol
   b. Lack of familiarity with subject matter
   c. The failure to build consensus
   d. An overabundance of options
86. A set of key measures that is used to judge progress is known as a(n)...
   a. Performance factor
   b. Dashboard
   c. Independent variable
   d. Benchmark

87. Volatility in nursing workload is less likely to be reported than other sources of waste because...
   a. Nurses are unlikely to complain
   b. It can only be perceived through the use of advanced metrics
   c. It is less observable
   d. It takes place infrequently

88. A hospital’s automated pharmacy program will not fill a prescription unless the patient’s allergy information has been entered. This is an example of...
   a. Constraint
   b. Natural mapping
   c. Affordance
   d. Standardization

89. The frequency of errors in a particular process would best be displayed in a(n)...
   a. Matrix diagram
   b. Pareto chart
   c. Affinity diagram
   d. Histogram

90. One disadvantage of using separate scorecards for financial and customer satisfaction data is that...
   a. Administrators are likely to overvalue the financial information
   b. Employees will become confused
   c. There is likely to be more resource waste
   d. It requires special training

91. The most common source of the goal statement for a tree diagram is...
   a. An affinity diagram
   b. The root cause identified by an interrelationship digraph
   c. An assignment
   d. A histogram

92. One of the consequences of successful application of the theory of constraints is...
   a. Major system changes
   b. Fewer employees
   c. The creation of new constraints
   d. Capital improvements

93. Most quality problems in healthcare are the result of...
   a. Lack of compassion
   b. Lack of resources
   c. Disorganization
   d. Ignorance
94. The system limits of a process typically are based on the average and standard deviation of the...
   a. Yield and error rate
   b. Duration and validity
   c. Yield and duration
   d. Validity and yield

95. A hospital administrator wants to determine how changes in resource allocation would affect total profit. By manipulating a variable, for instance the number of nurses assigned to a floor of the hospital, the administrator can calculate the difference in profit. The administrator is performing a...
   a. Sensitivity analysis
   b. Risk analysis
   c. Force field analysis
   d. Decision analysis

96. Over the past three decades, medical knowledge and technology have...
   a. Expanded at a slow rate
   b. Expanded at an exponential rate
   c. Both expanded and declined at different times
   d. Declined at a slow rate

97. It has been determined that a hospital’s blood transfusions are 99.7 percent error-free. Which function can be used to determine the number of blood transfusions that are likely to be performed before an error is made?
   a. Binomial distribution
   b. Poisson distribution
   c. Negative binomial distribution
   d. Multinomial distribution

98. An increase in chronic conditions is one consequence of...
   a. More complicated intervention strategies
   b. Advances in medical technology
   c. Greater population density
   d. Longer life expectancy

99. In healthcare, the most common adjustment to the traditional balanced scorecard is the...
   a. Focus on financial performance
   b. Extra emphasis on patient results and customer satisfaction
   c. Elimination of business operations
   d. Use of advanced metrics

100. Which of the following is a reactive system?
    a. Questionnaires
    b. Market research
    c. Information obtained from customer complaints
    d. Interviews with customers
101. The “four bads” associated with drug-related morbidity are...
   a. Bad drugs, bad doctors, bad pharmacists, and bad patients
   b. Bad drugs, bad patients, bad luck, and bad doctors
   c. Bad drugs, bad pharmacists, bad nurses, and bad luck
   d. Bad drugs, bad patients, bad prescribing, and bad luck

102. A quality improvement team wants to construct a simple chart that will depict how institutional spending and time are applied to a set of basic tasks. This chart will take the form of a...
   a. T-shaped matrix
   b. L-shaped matrix
   c. X-shaped matrix
   d. Y-shaped matrix

103. If the load and the mix of a testing laboratory are leveled, the result will be...
   a. An increase in capacity
   b. A reduction in cost
   c. An increase in capacity and/or a reduction in cost
   d. An increase in capacity or a reduction in cost

104. One difference between evidence-based practice and research utilization is that...
   a. Research utilization takes into account the preferences of the patient
   b. Research utilization relies on only one study
   c. Evidence-based practice is based on tradition
   d. Evidence-based practice incorporates the ideas of opinion leaders

105. Which of the following is NOT one of the basic components of an optimization model?
   a. Constraints
   b. Objective function
   c. Variable inputs
   d. Price information

106. At present, the best way to improve the delivery of accurate and useful information about medication would be to...
   a. Create a universal database of patient records
   b. Improve the time it takes pharmacies to deliver medicine
   c. Give patients access to their lab reports
   d. Encourage pharmacists to visit nursing stations regularly

107. In general, how many steps should a failure modes and effects analysis take in each direction?
   a. One
   b. Two
   c. Five
   d. Ten
108. Team members begin to reach consensus on the rules for operation during the stage known as...
   a. Storming
   b. Forming
   c. Norming
   d. Recognition

109. Which of the following is a characteristic of a high-performing group?
   a. More advocacy than inquiry
   b. More internal than external focus
   c. More skepticism than optimism
   d. A blend of internal focus and external review

110. Which component of decision-making typically receives much less time than it deserves?
   a. Framing
   b. Gathering information
   c. Drawing conclusions
   d. Voting

111. Which of the following is NOT a goal of quality circles?
   a. To improve customer relations
   b. To develop new services
   c. To improve job satisfaction
   d. To maximize employee potential

112. In the most efficient labs, each technician...
   a. Can only complete a single task
   b. Performs every task
   c. Can perform every task, but usually performs only one
   d. Rotates between tasks on a daily basis

113. A health care facility has eleven wheelchairs. The likelihood that a wheelchair will be available when needed can be calculated with a(n)...
   a. Binomial distribution
   b. Multinomial distribution
   c. Factorial
   d. Effects analysis

114. When developing quality standards, the best source of information is...
   a. Trade publications
   b. The facility scorecard
   c. Prior performance measures
   d. External benchmarking data

115. Which of the following is NOT a primary goal of lean enterprise?
   a. Improve quality
   b. Stabilize total costs
   c. Eliminate waste
   d. Reduce lead time
116. Why is it important to use customized benchmarks?
   a. Administrators may not release comprehensive data
   b. Customer satisfaction is the most important measure of success
   c. External factors may differentiate otherwise similar organizations
   d. Customization eliminates resource waste

117. At the beginning of a planning meeting, the participants are asked to make a list of their priorities. These lists are then compiled, and an overall list of priorities is created. This process is known as...
   a. Nominal group technique
   b. Diversion and conversion
   c. Force field analysis
   d. Multi-voting

118. Which of the following is NOT one of the operational measurements emphasized by the theory of constraints?
   a. Throughput
   b. Operating expense
   c. Inventory
   d. Net profit

119. A hospital experiences very infrequent problems with infusion equipment. The best statistical distribution model for examining these errors would be the...
   a. Binomial distribution
   b. Poisson distribution
   c. Normal distribution
   d. Multinomial distribution

120. The most common and effective style of checklist for hospital employees is...
   a. Standardized and rarely updated
   b. Requires detailed responses
   c. Only required for new employees
   d. Designed to prompt a response of “yes” to almost every question

121. A meeting facilitator notices that the team has a tendency towards groupthink. What is one structural way to correct this problem?
   a. Meet late in the day
   b. Meet more often
   c. Break the group down into smaller subgroups
   d. Have comments submitted in writing

122. Employee incentive programs should emphasize...
   a. Adherence to established protocols
   b. Excellent results
   c. Improved cost savings
   d. Reduction in adverse events
123. When assessing an emergency room, the best strategy for data collection is...
   a. Cluster sampling
   b. Continuous sampling
   c. Matched random sampling
   d. Accidental sampling

124. Which of the following is NOT one of the four elements of a health service microsystem?
   a. A clear and identifiable population of patients
   b. An environment in which self-assessment information can be obtained
   c. A broad collection of health-care providers, support personnel, and private contractors
   d. Well thought-out work processes

125. What is one advantage of a voluntary error reporting system over a mandatory error reporting system?
   a. Mandatory systems are only targeted at very narrow areas of practice
   b. Voluntary systems eliminate the need for communication between healthcare organizations
   c. Voluntary systems elicit more reports from front-line practitioners
   d. Mandatory systems discourage the reporting of non-fatal errors

126. The main difference between the Taguchi model of service provision and the traditional model is that...
   a. The Taguchi model identifies waste any time a process varies from its target
   b. The traditional model is less forgiving of error
   c. The Taguchi model is only applicable to manufacturing processes
   d. The traditional model requires an organization with at least fifty employees

127. An administrative team is using an interrelationship digraph to examine the problem of nursing workload volatility. What will the team do after making a list of the factors that influence this issue?
   a. Confer with an expert
   b. Tabulate the data
   c. Identify root causes
   d. Draw relationship arrows between the factors

128. To deal with volatile workloads, a laboratory creates a fast track for samples that need to be processed immediately. One common result of this strategy is that...
   a. Average lead times will be reduced
   b. The laboratory will stop having bottlenecks
   c. Technicians will become confused
   d. The portion of samples placed in the fast track will steadily increase

129. Which of the following diagrams is appropriate for categorizing the needs of customers?
   a. Kano model
   b. Histogram
   c. Flow chart
   d. Matrix diagram
130. The most important characteristic of the controls in a case-control study is that they are...
   a. Drawn from a random pool of patients
   b. Identical to the cases in every respect except for the presence of the targeted condition
   c. Available for frequent observation
   d. Literate

131. When a hospital administration decides on strategy, this information should be shared with...
   a. Employees, patients, and the community
   b. Employees only
   c. Employees and patients only
   d. No one

132. When conducting an audit of a large department, an administrator will likely apply the central limit theorem. What does this mean?
   a. He will average all of the data from the department
   b. He will focus his efforts on the departmental leadership
   c. He will assume that a sample is representative of the department as a whole
   d. He will compare the department’s performance to ISO 9001 standards

133. One common problem in labs with low turnover is...
   a. Excessive slack time
   b. Narrow specialization by technicians
   c. Failure to adapt
   d. Confrontations between management and technicians

134. Frequent benchmarking is important in lean service because...
   a. It boosts employee morale
   b. It prevents an organization from failing to react to external changes
   c. It eliminates employee waste
   d. It reduces adverse drug events

135. Root cause analyses most often reveal that mistakes are the result of...
   a. A series of small errors
   b. A single miscalculation
   c. A culture of incompetence
   d. Bad actors

136. Which of the following is the strongest basis for practice?
   a. Systematic reviews of randomized clinical trials
   b. Descriptive studies
   c. Qualitative studies
   d. Opinion leaders

137. Research suggests that people make fewer errors when they...
   a. Perform several tasks at once
   b. Work creatively
   c. Work individually
   d. Work in a team
138. A brief analysis of interventions for stroke is likely to be relatively unhelpful because...
   a. Most stroke victims die
   b. Stroke victims tend to be very old
   c. Research has yet to discover an effective standard treatment
   d. Strokes are likely to be accompanied by other conditions

139. Hospitals pay special attention to blood transfusions because...
   a. They are easy to monitor and verify
   b. They are rare
   c. They are responsible for the largest percentage of malpractice suits
   d. They are complicated and dangerous

140. The main difference between a dashboard and a scorecard is that...
   a. A dashboard is only to be viewed by senior administrators
   b. A scorecard includes performance measures from multiple departments
   c. A dashboard only includes one measure of performance
   d. A scorecard describes past performance, while a dashboard depicts performance in real time
**Answers and Explanations**

1. **A:** According to the Institute of Medicine, the three domains of quality care are customization, safety, and interventions consistent with the latest medical findings. These domains provide the basic structure for the IOM’s recommendations about quality care originally presented in the groundbreaking book *To Err Is Human*. Government regulation is an essential part of quality care, but it is not a domain in itself. Instead, the IOM recommends that healthcare facilities work with government agencies to develop fair but efficient regulatory policies that protect practitioners and patients alike.

2. **C:** Independent contractors are the group least likely to report errors. In part, this is because they have the least personal interest in the success of the health care facility. Also, an independent contractor is more likely to view his employment as tenuous, and is therefore more nervous about admitting mistakes. A system that explicitly avoids punishing those who report will improve the incidence of error reporting among independent contractors.

3. **B:** Abuse is not one of the types of quality problems identified by the Institute of Medicine’s National Roundtable on Health Care Quality. Misuse, overuse, and underuse are the three most common problems; they also represent three sources of waste in health care. The National Roundtable on Health Care Quality was significant because it asserted that the provision of health care services can be assessed with scientific precision. This was a major step towards incorporating business and manufacturing productivity systems in health care.

4. **B:** In behavioral health, the most important sentinel event for root cause analysis is death. A sentinel event is any adverse occurrence that is outside the range of the normal progression of the diagnosed illness. In other words, death can only be a sentinel event when it occurs in patients who are not expected to die. In cases where death is not considered likely, it is usually the most important sentinel event, because it is the one that most urgently requires investigation and prevention. The term *sentinel event* was popularized by the Joint Commission on Accreditation of Healthcare Organizations.

5. **D:** It is easy to conduct a survey of medication-related errors because prescription drug use is common and well documented. For this reason, there is a vast literature on the subject. However, many other types of error remain relatively unexplored. For instance, latent errors, like those related to poor training or improper calibration of equipment, are much less likely to be analyzed. Nevertheless, it is important to continue analyzing medication-related errors, both because they are quite common and because they are dangerous and costly. There is currently a movement to establish a standardized medication-error reporting system that will enable the compilation of statistics on a larger scale.

6. **A:** In a successful lean healthcare facility, the largest costs related to quality will be incurred by preventive efforts. Indeed, a lean facility is likely to spend much more than another facility on prevention. A lean facility saves money by reducing errors and eliminating waste. Moreover, prevention programs in a lean facility tend to be more efficient and targeted. Over time, a lean healthcare facility may be able to phase out certain elements of prevention.

7. **B:** The best time to discuss the results of a meeting exit survey is at the beginning of the next meeting. This gives the team members the best opportunity to apply the results of the survey.
immediately. A facilitator should use an exit survey to improve the protocol of meetings. It is best for these surveys to remain anonymous so that respondents will feel comfortable being honest. Email is not a good medium for exit surveys because it creates a permanent and traceable record and therefore discourages honesty.

8. C: Whenever possible, medication orders should be by dose. This is the most important variable related to medication, and the one which has the most relevance to the products actually used by the patient. Medication orders that are classified by weight, volume, or strength are often confusing to pharmacists. Moreover, several different unit systems (e.g., metric or SI) may be used, so there is a greater risk of error. To reduce the possibility of mistakes, healthcare facilities should standardize the protocol for medication orders.

9. A: The best explanation for the relatively slow introduction of lean practices into medical laboratories is that the variability and complexity of the samples in the laboratory is much higher than in a manufacturing environment. In laboratories, it is common for a huge number of slightly different samples to be processed. A simple assembly line approach to laboratory processes is rarely successful. However, there are striking analogies between manufacturing and laboratory work, and laboratories can drastically improve efficiency by adopting lean practices. Contrary to the beliefs of some, lean practices do not discourage innovation. Instead, they enable laboratories to handle greater volume and diversity without sacrificing quality.

10. B: A simple but effective way for managers to obtain the support of team members is to ask for it. Unfortunately, many assertive managers feel that openly requesting buy-in from team members is a sign of weakness. What they do not realize is that the members of a team are more likely to respond positively to a leader who they believe is humble and capable of admitting that he needs help. Threats and coercion only antagonize subordinates. In a healthcare facility, team leaders are likely to be dealing with healthy egos. The best way to elicit the support of confident and independent doctors and nurses is to request it directly.

11. D: A delay in discharging patients is likely to cause recurrent bottlenecks in admissions from the emergency room and surgical wards and in the filling of prescriptions. Indeed, the negative consequences of discharge delays may include the creation of other bottlenecks. It is important to recognize that inefficiencies in one area of service provision can cause inefficiencies in many other areas. A bottleneck occurs when there are not enough resources available to perform all of the functions necessary at a given time. Discharge delays waste time, money, and resources.

12. D: A quality assessment program should not include rare conditions that have a small effect on mortality or morbidity. Such conditions have a limited bearing on the overall success of care. There is a general agreement as to which conditions are appropriate for inclusion in a quality assessment program. A condition should meet five criteria. First, it should either be common or have a significant effect on morbidity or mortality. Second, there should be scientific evidence that there are treatments effective at preventing or mitigating the effects of the condition. Third, it should be established that improvement in the quality of treatment for the condition will improve overall health. Fourth, the condition should have cost-effective interventions. Finally, the interventions for the condition should be susceptible to significant influence by health care providers.

13. C: When a doctor fails to administer an indicated test and the patient has an adverse result, the doctor has committed a diagnostic error. A diagnostic error is committed whenever a condition is misidentified or an indicated test is not performed. A diagnostic error can result in even more
errors in the future. A preventive error is a mistaken approach to avoiding a condition, while a treatment error is a mistake related to the resolution of a condition. A communication error may occur between two service providers or between a service provider and a patient.

14. B: The best time for chairing is at the beginning of a meeting. In most cases, the facilitator and the chairperson of the meeting are two different people. The chairperson is responsible for reviewing the minutes from the previous meeting and eliciting feedback from team members. A facilitator may be charged with organizing and moderating discussion, but the introduction to the meeting is typically conducted by the chairperson. In many situations, it is appropriate to rotate the chairing duties.

15. C: Tradition does not contribute to evidence-based practice in healthcare. The evidence-based practice movement consists of a renewed emphasis on scientific rigor and empirical data. The preferences of patients are considered, but the primary determinant of intervention and therapy is the evidence from research studies and the experience of practitioners. Traditional methods of therapy may be investigated to determine their efficacy, but they are not used for sentimental or cultural reasons. In addition to clinical expertise, evidence, and patient preferences, evidence-based practice devises therapies based on patient history and the availability of resources.

16. A: SIPOC (suppliers, inputs, process, outputs, customers) is different from the other three acronyms, which are sequential programs for quality improvement. SIPOC, on the other hand, is a form of diagram that enables Six Sigma practitioners to identify the important components of process improvement. DMAIC (define, measure, analyze, improve, control) is a general structure for eliminating defects. Similarly, PDCA (plan, do, check, act) and PDSA (plan, do, study, act) are structures for the improvement of processes.

17. A: In the perfect lean enterprise, delivery to the customer is instantaneous. Of course, instantaneous delivery is rarely possible. Nevertheless, the strategy of lean enterprise is to examine all of the ways in which service provision deviates from the ideal, and then to minimize these ways as much as possible. A lean healthcare facility will never attain instantaneous delivery, but it can continually improve by aiming for this standard. Of the other answer choices, it is true that lean enterprises often offer customizable delivery, but this is not a necessary condition of lean enterprise.

18. B: A presentation on the basic structures and processes of clinical governance would be most useful for the organization as a whole. Such a general presentation would really only be effective as an introduction for the entire organization. Other presentations, such as those delivered to small teams, the directorate, or individual employees, will need to be more targeted and specific. It is a good idea to introduce the basic concepts of clinical governance to the entire organization because the transition to this method of management often entails drastic change.

19. A: A hospital-wide set of professional standards is important because it reduces the waste of time and resources. As much as possible, healthcare facilities should standardize professional behavior in every department in order to eliminate confusion and reduce inefficient behavior. In some cases, the adoption of universal professional standards will reduce the need for communication, but this is not a necessary consequence. Similarly, it may be that standardization will decrease the number of bottlenecks, though again, this is not inevitable.
20. C: One disadvantage of the visioning strategy for setting goals is that the group must have at least six members for it to be feasible. In visioning, team members gather in groups of two and create lists of possible solutions to a problem. Each person then switches partners and shares his list. This process is repeated at least one more time, though in some visioning exercises team members partner up with seven or eight different people. Visioning is effective because it allows individual team members to interact with a large number of peers within a one-on-one setting that encourages effective communication.

21. C: Before conducting a safety audit in an emergency department, an administrator must first obtain a written set of safety standards. This is necessary so that the administrator can compare his observations to the established protocol. The general purpose of a safety audit is to identify areas in which the department deviates from standard procedure. In order to perform an effective audit, the administrator needs to have a general familiarity with the rules that his employees follow.

22. C: In the given situation, the best question for the facilitator to ask would be, "Were you feeling irritated during the meeting?" This phrasing is appropriate because it does not make assumptions about the participant's feelings. It may be that the participant was not irritated, or was irritated by something unrelated to the meeting. In any case, the facilitator should not make any suppositions without first talking to the participant.

23. A: The process chain in a laboratory is particularly subject to variability. In most medical laboratories, there is a great degree of volatility in the number of samples. This can be devastating to efficiency, particularly as it can create delays or necessitate the hiring of extra employees. Many laboratories are adopting lean manufacturing strategies to reduce delays and smooth out the variability of operations.

24. D: Research suggests that the largest proportion of adverse effects attributable to negligence occur in the emergency room, where the volatile workload and elevated stress level is most conducive to negligent acts. However, there are steps that can be taken to reduce these adverse events. Standardization and comprehensive training can diminish, though not eliminate, the incidence of adverse events related to negligence.

25. D: Verbal orders are the source of the most medication errors. Automatic orders, on the other hand, are responsible for the least medication errors. Verbal orders are more likely to be misunderstood or forgotten. Even though many doctors have notoriously bad handwriting, written prescriptions are still likely to be filled correctly. It is best to automate prescriptions as much as possible, and then to standardize the process for verbal orders. For instance, many facilities reduce errors by mandating that verbal prescriptions always be measured in metric units.

26. A: “What do you hope to accomplish in the meeting?” is not one of the typical questions in a force-field analysis. A force-field analysis is a retrospective rather than a prospective look at meeting structure and organization. In other words, it is a tool used to review what has happened in the past rather than to plan for the future. Force field analysis is based on the idea that progress can be made by enumerating the forces that contribute to or hinder the achievement of goals. Facilitators often use this technique to streamline meetings.

27. B: The definitive proof of the success of a regulation program is a decreased need for inspections. Ultimately, the presence of a comprehensive and effective regulatory system means that rules are followed without enforcement being required as often. The other answer choices
represent frequent positive consequences of effective regulation, but are not necessarily indicative of regulatory success. The initial costs of implementing a regulatory program can be high, but become cost effective over time.

28. C: In the scenario described in question 28, the most likely cause is that the drugs come in similar packaging. Errors resulting from similar packaging are surprisingly common in healthcare facilities. As a result, many facilities take specific steps to label or otherwise differentiate such medications. Although it can be valuable to have standardized packaging for drugs, there must also be a clear and universal system for differentiation.

29. D: One advantage of the kaizen approach to DMAIC implementation is that it is accomplished in about a week. During this period, almost all other operations must be suspended as employees devote themselves entirely to learning the new system. There are a few different systems for implementing a DMAIC (define, measure, analyze, improve, control) program for process improvement. The appropriate implementation system depends on the situation. However, the success of the kaizen approach helps refute the argument that Six Sigma is costly and time-consuming to implement.

30. D: The practice of waiting for a certain number of samples before commencing a test run results in longer lead times. In any process, lead time is the interval between the first step and the delivery of results. It stands to reason, then, that intentional delays in sample processing will create longer lead times. Many laboratories feel that it is more efficient to wait for a larger batch of samples before conducting a run. Lean practitioners, however, recommend that samples be processed as soon as they are ready. Reduction in lead time contributes to greater efficiency and the ability to handle larger volume.

31. C: A whole systems approach to clinical governance is important because changes must be applied at all levels of the organization. Men and women involved in clinical governance have to look at the big picture, which means that they must consider all of the elements and interrelationships of the healthcare facility. It may be that consideration of the healthcare facility as a whole will lead to the isolation of particular areas of concern, but this is not a necessary consequence. Taking the whole systems approach to clinical governance requires more than one week; indeed, it is an orientation that lasts for the entire life of the healthcare facility.

32. C: In this scenario, the prescription should not count towards the pharmacy’s yield. In lean service provision, only those processes that are completed without the necessity of reworking or repair are considered as a part of yield. The goal of lean service implementation is to improve yields by reducing errors and defects. Mistakes due to bad handwriting are common in healthcare, which has led many facilities to standardize notation and introduce labeling or bar-coding systems. Such errors do not need to be reported to the FDA.

33. C: In this scenario, a reorganization of the hospital hierarchy should minimize the manager’s span of control. The span of control is the number of subordinates who report directly to a single supervisor. Over the past few decades, a general trend towards flattening organizational structures has increased the average span of control. Whereas, in the past, 10 was considered the largest number of employees that could be effectively supervised by a single manager, now it is common for a single manager to be responsible for the work of dozens of employees. As a result, ineffective leadership has increased.
34. A: Hospitals that implement computerized provider order entry (CPOE) almost always see a decline in medication errors. CPOE is a standard program for automating medical instructions. Implementation of a CPOE program diminishes errors related to faulty transcription or unclear handwriting. These programs also simplify inventory and decrease delays in order completion. Perhaps more importantly, the implementation of a CPOE program in large facilities enables employees to give and receive orders without being in physical proximity to one another.

35. A: In a traditional meeting, the timekeeper and the minute taker roles are filled by different people every time. Rotating these positions enables every member of the group to participate. It is a good idea to have these functions performed by two different people because they can be somewhat distracting and time-consuming. Establishing a regular rotation for timekeeping and minute taking is one way to improve teamwork and cooperation in a group.

36. D: An adverse drug reaction is defined as harm caused to a patient as a result of the administration of a drug. It may manifest as a presentation of a negative symptom or simply a reduced effectiveness of other therapies. An unforeseen side effect or a drug interaction may or may not be harmful to the patient. Harm that occurs during or after a drug administration would be better identified as an adverse drug event, unless it can be shown that the medication was the cause.

37. B: This sort of decision should be made by voting. Relatively insignificant decisions should not be allowed to take up a large amount of time. The process of building a consensus or brainstorming on a trivial subject, such as the one described in question 37, would be a waste of resources. At the same time, it is always productive to give managers a voice rather than to make decisions by decree. A simple vote will quickly dispatch this unimportant issue so that the group can move on to more important subjects.

38. D: Confronted by excessive WIP levels, many laboratories take the unhelpful step of installing new technology. Too often, laboratory managers assume that new technology will solve their problems without considering just how this will occur. Before installing new technology, a laboratory manager would be wise to run a DMAIC program to identify areas for improvement.

39. A: When establishing a clinical governance training program for the directorate, it is useful to align the subject matter with the specific tasks of the audience. Because it can be assumed that members of the directorate will already be familiar with the general concepts of clinical governance, it is much more effective to choose training programs for narrow and specific tasks. However, it is not efficient to customize instruction for each member of the directorate. Case studies are an essential part of clinical governance training.

40. A: In the lean enterprise model, the first step toward improving quality is establishing performance metrics. These metrics are the scale on which progress will be measured. They should be appropriate and general so that performance can be compared between departments and with other successful organizations. The other answer choices to question 40 represent essential steps in lean enterprise, but they are based on solid performance metrics.

41. B: Time available divided by time available and time required is the Six Sigma ratio for dependability. In Six Sigma, dependability is the degree to which a process or product is available when it is needed. The implementation of Six Sigma practices requires products with a high degree of dependability because processes need to be completed as quickly as possible. One of the major
contributions of Six Sigma and other productivity philosophies has been the application of scientific principles and formulas to manufacturing and the provision of services.

42. B: The scenario described in question 42 is an example of slack time. Slack time is the interval between the first and last times at which a process can be completed without delaying the overall project. In this case, some slack time is inevitable. The packaging process will always take a little longer than the labeling process. As a result, the duration of this step of the process has a minimum duration equal to the time required for packaging. Almost every system has some slack time, but it should be diminished as much as possible.

43. C: The hospital manager’s beliefs are aligned with theory Y. Theory Y is the management philosophy that believes employees will thrive when they are given responsibility and the chance to innovate. Theory Y amounts to an optimistic view of human nature. Theory X, on the other hand, is a more skeptical management orientation. Adherents of theory X believe that people are lazy by nature, and will only perform their duties competently if they are monitored closely. Most managers blend these two theories in their professional practice.

44. D: Before QA activities begin, the scope of involvement should be identified. The scope of involvement is the entire set of materials, processes, and people that are required for a project. It is impossible to understand fully the influences on a project’s success without first identifying the scope of involvement. Quality assurance requires a systematic approach to identifying the scope of involvement. Responsibility and resources should not necessarily be shared before the initiation of quality assurance activities. On the contrary, one hallmark of successful QA is clear designation of responsibility, in particular for resources.

45. A: The protocol for ordering medication should be the same every time. Medication errors are among the most common and most preventable in a healthcare facility. One way to reduce these errors is to standardize the prescription process. Many healthcare facilities achieve a drastic reduction in medication errors by forbidding verbal orders. In any case, the protocol for ordering a medication should not be customizable, as this is likely to create confusion and lead to error.

46. D: The scenario described in question 46 is an example of latent error. A latent error is one made during setup or programming that creates negative consequences in the future. These sorts of errors are very difficult to identify, because they take place at a time far removed from the adverse events. In question 46, a latent error is present both in the malfunction of the machine and the short amount of time allotted to the anesthesiologist. Many times, it takes a combination of multiple latent errors to create an adverse event. Hospital managers are responsible for taking a detached and broad view of operations to identify and eliminate the sources of latent error.

47. A: In a typical hospital, less than five percent of errors are reported. Many hospital managers are surprised by this statistic, because the number of reported errors can seem large. However, healthcare facilities often have unclear or relaxed reporting policies. Part-time employees and independent contractors are much less likely to report errors. Unfortunately, the failure to report errors has negative consequences far beyond the point at which the specific error occurs. The best healthcare facilities establish mandatory error-reporting programs with an emphasis on being nonjudgmental and accepting of inevitable human error.

48. B: An analysis of the root causes of an abnormally high number of restraint deaths is most likely to indicate problems with staff orientation and training. Equipment, staffing levels, and alarm
systems can also be culpable in restraint deaths, but problems with orientation and training are much more likely. Restraint equipment has been designed to be very safe when it is used correctly. When used improperly, restraint equipment can be deadly. It should be noted that most root cause analyses indicate problems in multiple areas.

49. B: A good meeting facilitator will focus on process rather than content. Indeed, a facilitator need not even be familiar with the subject of the meeting to do his job well. No matter the content, the structure and administration of the meeting will proceed along similar lines. The other answer choices for question 49 represent poor choices for a meeting facilitator. The facilitator should always ask a great many questions before leaving a meeting. He should also offer suggestions whenever appropriate. With experience, a facilitator learns when to interject and when to stay on the periphery.

50. A: During the periods with the highest incoming workload, a laboratory that has not implemented lean practices is likely to have substandard lead time performance. Lead time is the full interval required to complete a process or fill an order. Longer lead times are considered substandard. Productivity, on the other hand, may be higher than normal during the periods with the highest incoming workload, as the laboratory is engaged in constant processing. A big spike in productivity is not necessarily a good thing, however, because it may indicate that the lab is not making the best use of its down time. In an ideal scenario, there is little difference in productivity or lead time regardless of incoming workload. This is known as smoothing out the workload.

51. D: When it is impossible for medications to be standardized, it is important to differentiate them clearly. Many medications have similar packaging and labeling, and so should be clearly distinguished in order to reduce medication errors. Hospitals and healthcare facilities often use color-coding or electronic tags to differentiate similar-looking medications.

52. C: Individual instruction on clinical governance is most effective when it is combined with targeted training. Clinical governance is a comprehensive approach to improving the quality of healthcare. It is a vast and complex subject that requires a great deal of employee education. Clinical governance training should not be tied to performance review, nor should it be delivered exclusively to new employees. It requires ongoing attention at all levels of the organization.

53. B: When establishing an incentive program for employees, the critical-to-quality parameters should be attainable and significant. The critical-to-quality parameters are targets that, when attained, will result in superior performance. Employee incentive programs should always focus on task performance rather than results. After all, employees can only be held responsible for doing their jobs according to prescribed protocol. If the results of their efforts are negative, then the protocols should be examined. Although the critical-to-quality parameters should not be determined by a democratic process, neither should they be established solely by a senior administrator. Instead, they should be the result of a clear-eyed determination of the most important and variable tasks in every process.

54. D: The scenario described in question 54 is an example of extra processing. Extra processing is anathema to the philosophy of lean. Whenever a lean manager spots a situation like the one described in question 54, he will immediately work to resolve it. In this case, the hospital would be wise to adopt a labeling system that is appropriate for all of its containers. In addition to the obvious creation of more work, the extra processing described in this question may encourage medication errors.
55. B: The discharge department of a hospital is at optimal efficiency when it completes the discharge progress at about the same rate as customer requests occur. Discharges cannot occur more often than customer requests. If discharges occur less frequently than customer requests, the discharge department is inefficient. It can be difficult to optimize a discharge department, as discharges tend to occur in clusters, which can be difficult to predict.

56. C: When a hospital official notes that most errors are occurring at the “sharp end,” he means that they occur during the interactions between caregivers and patients. The phrases “sharp end” and “blunt end” are used by quality management professionals to describe areas of practice. The “sharp end” is all of the operations that involve direct contact with the patient, client, or customer. The “blunt end” is all of the behind-the-scenes actions that take place outside of the awareness of the patient, client, or customer. Although patients are more likely to notice errors at the sharp end, there are significantly more errors committed at the blunt end.

57. A: It is appropriate for a facilitator to intervene when the progress of the meeting is threatened. After all, it is the job of a facilitator to maintain forward momentum and adhere to the meeting protocol. In some cases, however, disputes between meeting participants can be fruitful and should be allowed to continue. But more often than not, confrontations only serve to alienate participants.

58. C: Programming equipment to shut off in the event of a crisis is not a good way to mitigate injury. Equipment should be programmed to default to the least-harmful setting, but in many cases shutting off is as harmful as operating incorrectly. For instance, a respirator should never default to an “off” position. All of the other answer choices represent excellent strategies for mitigating injury.

59. B: The first and most important step in a disclosure conversation is admitting an error and apologizing. The wisdom of apologizing has long been a source of contention in healthcare circles. For many years, it was widely thought that an apology would leave the practitioner vulnerable to malpractice suits. However, recent legislation has established that an apology does not mean an admission of negligence or malpractice. It is now considered prudent to mollify a potentially confrontational patient or client by issuing a sincere apology.

60. D: The cost of controls is not included in a calculation of risk priority number. A risk priority number, or RPN, is an objective picture of the importance of a particular danger to performance. It is calculated by rating on a scale from 1 to 10 the severity of each possible adverse effect (where 10 is the most severe), the likelihood of each of these effects (where 10 is the most certain to occur), and the effectiveness of possible controls (where 1 is the most effective), and then multiplying these three numbers.

61. A: One consequence of the implementation of Lean Six Sigma practices in a hospital will be a reduction in inventory. Indeed, reduced inventory is one of the fundamental goals of Lean Six Sigma. The developers of this organizational philosophy assert that there are numerous costs associated with maintaining a large inventory. Essentially, they believe that it is impossible to operate at peak efficiency while maintaining a large store of products and resources. Although many people believe that the implementation of Lean Six Sigma practices will lead to reductions in staff and manufacturing costs, this is not necessarily the case.

62. D: A program for assessing the validity of rolled throughput yield calculation is called measurement systems analysis (MSA). MSA is used to evaluate many of the metrics used in business. All sorts of factors can influence the equipment and methodology used to measure
performance. Because advanced productivity systems like Six Sigma and lean depend on accurate and detailed statistics, effective measurement systems analysis is essential.

63. A: The general intent of the PDSA cycle is to optimize a new process. This cycle has four steps: plan, do, study, and act. It is sometimes referred to as PDCA (plan, do, check, act) or the Deming cycle. The first step of this cycle is to identify the targets that must be met in order to achieve output goals. The next step is to implement the new processes, often on a small scale. The third step is to measure the performance of the new processes and compare it with the expected results. Finally, the last step is to determine areas for improvement.

64. B: In the most common framework for quality assessment, the three dimensions of quality are structure, process, and outcomes. The structure of care is the basic elements of the population and the health care provider. Care can only succeed to the extent that the structure allows. Elements of structure include the characteristics of the community, healthcare organization, population, and healthcare provider. Process is the dynamic act of care provision. It includes both technical and interpersonal excellence, because quality care requires not only competence but responsiveness to the emotional needs of patients. Finally, outcomes are the full range of results from care. Clinical status and mortality are outcomes, but so is patient satisfaction.

65. D: One common model for administrative meetings is for small groups to discuss specific problems and then gather in a plenary. This model is also popular for conferences. A plenary session usually includes a general summary of what has been discussed in the small-group meetings, with an opportunity for participants to ask questions and offer comments.

66. A: One characteristic of the SOAP model for medical records is the inclusion of both subjective and objective data. The SOAP model is a common method of organizing medical information. The subjective part of the record includes the patient's presenting complaint, symptoms, and any information obtained in the interview. The objective component consists of the results of the physical examination and any additional tests (e.g., blood test, MRI). The assessment is the clinician's diagnosis. Finally, the plan is the set of recommended treatments.

67. B: The administrator's first step should be to discuss the meeting participants with the manager. This discussion will inform and organize preparation for the meeting. It is likely that the manager will have valuable insight into the existing knowledge base and special characteristics of the new employees. It may be useful for the administrator to review the notes from previous meetings or organize his notes, but these steps should take place after talking with the manager.

68. C: A root cause analysis of inpatient suicides would be most likely to discover problems with the physical environment. Staffing levels, staff orientation, and the availability of information also may contribute to suicide, but the physical environment is much more likely to be involved. Of course, most root cause analyses reveal that there are multiple factors involved in incidents of inpatient suicide.

69. C: One important step towards reducing errors in a system that spans several departments is giving a single person responsibility for overseeing the entire system. Often, the sources of error can only be spotted when a single person examines the system as a whole. It may be impossible for one person to examine in detail the system in every area, but a general supervisor may be able to spot areas in which departments are performing the same functions differently. This sort of
inconsistency can lead to errors that may be impossible for department heads to see from their limited perspective.

70. A: In this scenario, the subordinate would be most likely to suggest amendments to the meeting agenda. A content leader is a person who exhibits interest and even mastery of the material with which the group is concerned. When a content leader emerges, administrators should allocate more responsibility to him or her. It should be noted that content leaders are not necessarily easy to work with, because they often become impatient with their colleagues.

71. D: Hospitals include APACHE (acute physiology and chronic health evaluation) III scores in their analysis of infection rate to establish the general likelihood of infection for patients with various conditions. This score is used to determine which patients get certain medicine and to predict the likelihood of morbidity for patients with certain diseases. The inclusion of APACHE III scores on an infection rate analysis might be included to indicate how well the hospital is performing relative to similar institutions.

72. A: As part of the implementation of lean practices, “non-value-add” activities should be minimized or, if possible, eliminated. To classify an activity as “value-add” is to say that its performance increases the value of the product or service. Although it is obvious that a project should maximize value-add activities and minimize non-value-add activities, this is not always possible.

73. C: According to JCAHO, the primary cause of wrong-site surgery errors is communication failure. Specifically, these errors are caused by incoherent or incomplete communication between practitioners. Communication factors can be caused by any number of external factors: noisy work environment, lack of a standardized notation system, or bad handwriting to name a few.

74. A: This is a bad strategy because it depends on the vigilance of only one employee. Even the best employees will make mistakes, forget things, or lose their concentration. Important processes should never rely on a single person to repeatedly remember to perform a task. Instead, there should be an automatic alert system that reminds multiple employees that a task needs to be performed.

75. A: One way to create useful alignment in an organization is to base the assessment of each department on the same set of performance dimensions. In lean organizations, alignment is valued because it brings clarity. When all of the departments in an organization are evaluated according to the same dimensions of performance, each employee will be able to assess his own department as well as the other departments. Also, it will be easy for administrators to compare the performances of all the departments.

76. C: In a generic dispensing program, it is not mandatory for the salt form to be the same. Variations in the salt form do not have any measurable effect on the performance of the drug. All of the other answer choices for question 76 represent essential conditions for generic medications. Many hospitals are able to save money by implementing such programs, but they must be careful to follow the law.

77. C: If administrators are given a list of the variables that predict mortality for patients with a given condition, then they should be able to create a formula for the risk of death for each patient.
Such a formula could be used to allocate resources and organize intervention strategies. Also, it could be used to chart the facility’s progress in efforts to improve patient outcomes.

78. A: An example of a sentinel event is an unattended and at-risk patient’s adverse response to medication. A sentinel event is an adverse occurrence that is not in the normal progression of a patient’s illness. The death of a patient from lung cancer would not be considered a sentinel event, for example. However, an adverse drug event is considered a sentinel event, even if the patient is considered to be at risk. Whenever a sentinel event occurs, the healthcare facility should perform a root cause analysis.

79. D: One important driver of customer dissatisfaction in the healthcare industry over the past decade is the improvement of customer care in other service industries. Customers have come to expect a certain standard of care, and as a result are unhappily surprised by their treatment in healthcare facilities. This disparity in treatment is one reason that healthcare administrators have begun to incorporate the strategies and techniques of successful manufacturing and service organizations.

80. D: Patient, clinical, and employee satisfaction are all equally important. That is, they are all targets at which quality improvement efforts should aim. It is common for healthcare facilities to tell the public that patient satisfaction is paramount, to say internally that employee satisfaction is most important, and to act as if clinical satisfaction is the top priority. It is much more productive for an organization to establish concrete performance objectives that will guarantee the satisfaction of all three constituencies.

81. A: The minimum practical lead time for an analytical laboratory is the release constraint test time for the microbiology lab. There is no point to the lead time in the analytical laboratory being any smaller than the release constraint test time for the microbiology lab, because samples can only be processed as quickly as the microbiology lab allows. If the analytical lab reduces lead time below the release constraint test time of the microbiology lab, the resulting difference will simply be slack time.

82. B: A time and materials contract would be most appropriate when remodeling an old wing of a hospital. This type of contract is suitable when the task is difficult to define ahead of time. Remodeling an aging structure can entail hidden costs, such as water or mold damage inside the walls. A time and materials contract states that the contractor will be paid for the overhead, materials, and time required to finish the job.

83. D: In the optimal decision-making process, the most time will be devoted to gathering information. Doing this well depends on effectively framing the issue. Once the issue has been framed, the decision-makers can determine the best sources of information. At the same time, the decision-makers should acknowledge those things that will be impossible to learn or discover. It is important for decision-makers to remain skeptical of their own ability to learn everything of importance about a given issue.

84. D: In lean enterprise, overproduction is the worst type of waste because it contributes to all of the other types. When an organization maintains too much inventory, it becomes inefficient in all areas of operation. Overproduction necessarily wastes time, resources, and effort. One of the fundamental tenets of lean enterprise is the maintenance of an inventory that is no larger than is absolutely necessary.
85. A: Team paralysis is not a common result of rigid adherence to meeting protocol. On the contrary, following the agreed-upon rules for group discussion encourages effective decision making. Team paralysis is more likely to be caused by ignorance, contentiousness, or an overabundance of options. An effective meeting facilitator will recognize the signs of team paralysis and will intervene to keep the meeting on track.

86. B: A set of key measures that is used to judge progress is known as a dashboard. A dashboard portrays performance as it is happening. It should only include the most essential metrics. Also, the metrics included on a dashboard should be easy to update and monitor because it needs to be accessible at all times. The point of a dashboard is to enable adjustments in real time.

87. C: Volatility in nursing workload is less likely to be reported than other sources of waste because it is less observable. When nurses are busy, they are typically spread out across an entire floor or department. They often have little idea of how busy their colleagues are at any given time. For this reason, it is very difficult to tell when a group of nurses is being deployed inefficiently, or when the workload is particularly volatile. Research has consistently shown that nurses are unable to perceive accurately this volatility unless they are working in close communication.

88. A: An automated pharmacy program that will not fill a prescription unless allergy information has been entered is an example of constraint. Constraints are valuable because they prevent unconscious or involuntary error. In this case, the employees of the pharmacy must answer the allergy question before they can deliver medication. Like a checklist, a constraint places the burden for proper performance on the system rather than the employee.

89. D: The frequency of errors in a particular process would best be displayed in a histogram. Histograms are charts that display the frequencies of various events. It resembles a bar chart, but the bars have varying widths depending on the magnitude of the frequency. A matrix diagram illustrates the relationships between multiple sets of data. A Pareto chart combines a bar graph with a line chart: the bar graph depicts frequencies in descending order, while the line graph illustrates the cumulative total. An affinity diagram illustrates the connections and similarities between items in a set of information.

90. A: One disadvantage of using separate scorecards for financial and customer satisfaction data is that administrators are likely to overvalue the financial information. Even when customer satisfaction is the avowed top priority of an organization, financial concerns nevertheless attract disproportionate attention. For this reason, administrators are encouraged to place all of the important pieces of data on the same scorecard.

91. B: The most common source of the goal statement for a tree diagram is the root cause identified by an interrelationship digraph. Interrelationship digraphs outline all of the factors that influence an issue, and then isolate the one factor that has the most influence. This factor is known as the root cause. On a tree diagram, the root cause will be entered first as the goal statement. Then, the diagram will depict the operations that must be performed to achieve the goal statement.

92. C: One of the consequences of a successful application of the theory of constraints (TOC) is the creation of new constraints. A constraint is the element of a process that restricts efficiency. When TOC is applied successfully, what was once a constraint will be brought up to speed with the rest of the operation. When this happens, other elements of the process may become restrictive to
efficiency. In other words, they may become constraints. The TOC model may need to be repeated many times until a system is brought to maximum efficiency.

93. C: Most quality problems in health care are the result of disorganization. In a way, this fact is uplifting, because it suggests that improving quality may not require hiring new employees or purchasing large amounts of new equipment. However, reorganizing processes to achieve superior quality and efficiency can take many years.

94. C: The system limits of a process are typically based on the average and standard deviation of the yield and duration. This means that the system can only be expected to perform within the measured ranges of quantity produced and time of operation. The intention of Six Sigma is to improve the yield and duration and thereby the system limits.

95. A: The administrator is performing a sensitivity analysis. This is a technique for assessing the influences of different inputs on a measurable output. The accuracy of sensitivity analysis is improved when all of the variables are objective and measurable, but it is possible to do a loose analysis by assigning numerical values to subjective variables.

96. B: Over the past three decades, medical knowledge and technology have expanded at an exponential rate. Indeed, the advances made over the past 30 years have moved medicine farther forward than the hundreds of years before them. This sudden and steep rise in the complexity of healthcare has necessitated a high degree of specialization. No one person can be an expert in all of the fields of care. For this reason, effective management is more important than ever.

97. C: A negative binomial distribution could be used to determine the number of blood transfusions that are likely to be performed before an error is made. Negative binomial distributions are effective for indicating how many successful events are likely to occur before a failure. This sort of statistical calculation is useful for monitoring trends in errors.

98. D: An increase in chronic conditions is one consequence of longer life expectancy. As people live longer, they are more likely to develop conditions like dementia, arthritis, and atherosclerosis. As a result, the increase in the incidence of these conditions should not be taken as evidence of poor national health. However, these trends in health should stimulate strategy changes by health care facilities.

99. B: In healthcare, the most common adjustment to the traditional balanced scorecard is the extra emphasis on patient results and customer satisfaction. These elements of performance are important for any business, but they are especially crucial to the success of healthcare facilities. For this reason, the balanced scorecard of a healthcare organization is more likely to make financial and business operations metrics secondary to customer and patient service. The goal of a healthcare organization is to deliver superior service, not to maximize profits.

100. C: The information gathered from customer complaints is considered part of a reactive system. Reactive systems, which depend upon external stimuli, are contrasted with proactive systems, which are initiated by the service provider. Questionnaires, market research, and customer interviews are all proactive. Although a service provider needs to have programs for reaction in place, it is better to elicit market information through proactive means, as this ensures a more accurate and continuous flow of information.
101. D: The "four bads" related to drug-related morbidity are bad drugs, bad patients, bad prescribing, and bad luck. These are the four factors most strongly connected with adverse drug events that lead to death. By addressing these issues, healthcare facilities can reduce medication error and drug-related morbidity.

102. A: The chart will take the form of a T-shaped matrix. This sort of matrix is appropriate for comparing two sets of data to a common third set. The most common arrangement is for two sets of data to run vertically along the left border of the matrix, with the third set running on a horizontal band across the middle. Using the example provided in question 102, the left border will include values for spending and time, and the horizontal band will name the basic tasks.

103. C: If the load and the mix of a testing laboratory are leveled, the result will be an increase in capacity and/or a reduction in cost. Leveling, also known as smoothing, reduces the volatility of the workload and makes it possible for the lab to process more samples, reduce the costs of operation, or both. This leveling can be accomplished with the implementation of lean practices. The mix of a lab is the composition and diversity of the samples, while the load is the volume of the samples.

104. B: One difference between evidence-based practice and research utilization is that research utilization relies on only one study. Both evidence-based practice and research utilization are objective, data-centered approaches to professional performance, but evidence-based practice is a more holistic incorporation of scientific evidence. Research utilization, on the other hand, is a strategy used by doctors and nurses to solve specific and discrete problems.

105. D: Price information is not one of the basic components of an optimization model. Optimization is a technique for maximizing the utility of limited resources. It requires three elements: an objective function, variable inputs, and constraints. The objective function is a measurable result that needs to be improved. The variable inputs are factors that can be manipulated to affect the objective function. Finally, the constraints are factors that inhibit the effects of the variable inputs.

106. A: At present, the best way to improve the delivery of accurate and useful information would be to create a universal database of patient records. It is not practical to require pharmacists to visit nursing stations regularly, and patients should already have access to their lab reports. Improving the time required for delivery is a positive step, but it will not necessarily improve patient understanding.

107. B: In general, a failure modes and effects analysis (FMEA) should take two steps in each direction. A failure modes and effects analysis is a two-part process: identification of errors or defects (failure modes) and consideration of the consequences (effects analysis). After identifying the causes of error or defect, an FMEA might go on to identify what caused those initial causes. However, proceeding too far down this path can be fruitless. In the same way, evaluating the consequences of the consequences of failure can be productive, but to continue in this direction ultimately generates too much noise to be useful. In some cases, it will be productive to extend FMEA for more than two steps.

108. C: Team members begin to reach consensus on the rules for operation during the stage known as norming. That is, they begin to establish group norms. The four general stages of group behavior are forming (when the group first comes together), storming (when differences are aired and arguments occur), norming, and performing (when the group accomplishes its tasks). Some
sociologists include a final recognition stage, in which group members acknowledge the steps that have been taken and resolve to modify their group behavior in the future.

109. D: One characteristic of high-performing groups is a blend of internal focus and external review. In other words, successful groups spend time thinking about their own performance and considering the performance of others. In contrast, groups that are excessively self-interested lose touch with external influences, while groups that are excessively concerned with external elements may become paralyzed. Research suggests that the best groups are by nature optimistic, inquiring, and interested both in their own work and the work of others.

110. A: Framing is the element of decision-making that receives much less time than it deserves. Framing is the process of organizing the question to be decided. It entails listing the possible sources of information and prioritizing the decision-making process. Research suggests that groups tend to spend about five percent of the entire decision-making process on framing when they should spend about 20 percent on it. If a decision is framed well, the subsequent parts of the decision-making process will proceed with relative ease.

111. B: Developing new services is not a goal of quality circles. A quality circle is a small group of employees who perform similar tasks. These employees meet at regular intervals to discuss their jobs and come up with solutions to shared problems. The emphasis of a quality circle is improving existing services, not creating new ones.

112. C: In the most efficient labs, each technician can perform every task, but usually performs only one. When this is the case, the lab has all the benefits of specialization without putting itself at risk of becoming too dependent on a single set of employees. Also, to prevent technicians from becoming bored, many labs will rotate their tasks on a weekly or monthly basis.

113. A: The likelihood that a wheelchair will be available when needed can be calculated with a binomial distribution. A binomial distribution is appropriate for illustrating probabilities when there are two possible events. In this case, the two possible events are that a wheelchair will either be available or not. A healthcare facility could use binomial distributions to determine the likelihood of a wheelchair being available for any given number of wheelchairs. This would be a way to determine the optimal number of wheelchairs for the facility to keep on hand.

114. D: When developing quality standards, the best source of information is external benchmarking data. This data is a map of what is possible in a given field. Healthcare administrators are advised to select an efficient and successful facility and to model their organization after it. One advantage of healthcare is that the nonprofit status of many institutions increases their transparency and cooperation with other organizations.

115. B: Stabilizing total costs is not a primary goal of lean enterprise. Indeed, it is possible that the implementation of lean enterprise practices will raise total costs, at least in the short term. Ultimately, lean enterprise is able to produce greater efficiency, which may translate into lower total costs. The focus of lean enterprise, however, is on the elimination of waste, the reduction of lead times, and (perhaps most importantly) the improvement of quality.

116. C: It is important to use customized benchmarks because external factors may differentiate otherwise similar organizations. For instance, the geographical location of a healthcare facility can have a significant but not obvious effect on statistics. If a facility is located near a lake frequently
used for recreation, then there is likely to be an increase in injuries during the warm months when the lake has the most visitors. As much as possible, benchmarks should be customized to provide a true basis for comparison.

117. A: The process in which meeting participants make a list of their priorities and then compile these lists is nominal group technique (NGT). NGT ensures that the opinions of every group member will be taken into account, and that every voice will at least be heard. The other answer choices represent alternate decision-making strategies. Multi-voting is very similar to nominal group technique, except that some participants are allotted more than one vote based on their status within the group.

118. D: Net profit is not one the operational measurements emphasized by the theory of constraints (TOC). However, net profit can be calculated by subtracting operating expense from throughput. In TOC, throughput, inventory, and operating expense are the most important operational measurements. Throughput is the rate at which money is generated, and can be calculated as selling price minus the price of raw materials. Inventory is the amount of investment in salable goods and services. Operating expense is the money spent converting inventory into throughput.

119. B: The best statistical distribution model for examining infrequent infusion equipment errors would be the Poisson distribution. This distribution is best for determining the minimum and maximum number of occurrences of an unlikely event over a specific interval. A binomial distribution describes the probability of two events with known probabilities both happening during the same interval. A normal distribution is arranged like a bell curve, with the most common occurrences in the middle of the range and the least common at either extreme. A multinomial distribution illustrates the probabilities of various results when there are more than two possible results.

120. D: The most common and effective style of checklist for hospital employees prompts a response of “yes” to almost every question. Checklists should serve as external reminders of all the tasks an employee needs to complete, but they should not require a great deal of time or effort. Without checklists, hospital operations may depend on the employees’ memories, which are inherently fallible. Checklists should also be easy for supervisors to scan.

121. D: One structural way to avoid groupthink is to have team members submit their comments in writing. Groupthink is an unhealthy tendency towards false consensus. Such a consensus is considered false because it does not represent the true opinions of the group’s participants. A group is susceptible to groupthink when its members are ill-informed or insecure in their positions. The leader of a group with this problem may at first be pleased by the ease with which consensus is reached, but will eventually be frustrated by the shallowness of the group’s knowledge and the failure to subject ideas to thorough scrutiny. By forcing the group members to submit their comments in writing, the facilitator enables people to express themselves without influence.

122. A: Employee incentive programs should emphasize adherence to established protocols. If performance protocols are clear and appropriate, they should define effective employee behavior. So long as employees abide by these protocols, their performance should be excellent. One characteristic of Six Sigma and other similar management philosophies is the emphasis on processes rather than results. If the processes are performed well, then the results should take care of themselves. If incentives are tied to results, employees may be tempted to cheat or falsify their numbers. In some cases, perfect performance of the task may still result in error. Employees should
123. B: When assessing an emergency room, the best strategy for data collection is continuous sampling. The workload of an emergency room is volatile, so only taking samples from a limited interval can create a distorted statistical picture. Instead, samples should be collected at regular and frequent intervals, so that the peaks and valleys of the workload are represented in the data.

124. C: A broad collection of health-care providers, support personnel, and private contractors is not one of the four elements of a health service microsystem. A health service microsystem is a small, self-sufficient group of front-line practitioners. Most people in the United States receive their care from a health service microsystem. Contrary to answer choice C, a health service microsystem includes a defined set of service providers, not a broad collection.

125. C: One advantage of a voluntary error reporting system over a mandatory reporting system is that voluntary systems elicit more reports from front-line practitioners. Research has consistently shown that doctors and nurses who work directly with patients are more likely to report errors when there is a voluntary system in place. Error reporting is a crucial area in quality improvement. An effective system is necessary for the acquisition of accurate data. At present, there is no standardized error-reporting system in healthcare, although there are several common models.

126. A: The main difference between the Taguchi model of service provision and the traditional model is that the Taguchi model identifies waste any time a process deviates from its target. In the traditional model, on the other hand, a process is considered optimal so long as it falls within a broad set of specifications. The Taguchi model brings a sense of perfectionism to service provision. It establishes ideal conditions, and then notes any areas in which the operation falls short. For this reason, it is better at informing quality improvement efforts.

127. D: After making a list of the factors that influence this issue, the team will draw relationship arrows between the factors. An interrelationship digraph, also known as a relations diagram, illustrates the causal connections between the factors associated with a particular issue. The factors are written down, and then arrows are drawn from the influencing factor to the factor being influenced. It is possible for two factors to influence one another. Whichever factor has the most outgoing arrows is identified as the root driver, while the factor with the most incoming arrows is identified as the essential outcome.

128. D: One common result of creating a fast track for urgent samples is that the portion of samples placed in the fast track will steadily increase. Typically, lab managers establish basic guidelines for which samples belong in the fast track, but as time passes, these standards are relaxed and a greater number of samples are placed on the accelerated track. Eventually, the fast track has queues similar to those that inspired its creation in the first place. As a result, it is simply better to speed up the processing of all samples than it is to create a special fast track.

129. A: A Kano diagram is appropriate for categorizing the needs of customers. In a classic Kano diagram (also known as a Kano model) the qualities of a product are broken down into five categories: attractive (pleasant but not necessary), one-dimensional (valued when fulfilled, disappointing when unfulfilled), must-be (assumed to be present, deal-breaking when unfulfilled), indifferent (neither positive nor negative), and reverse (valuable to some customers, unimportant to others).
130. B: The most important characteristic of the controls in a case-control study is that they are identical to the cases in every respect except for the presence of the targeted condition. Otherwise, there are too many variables that could skew the results of the study. It is not necessary for the controls to be drawn from a random pool of patients. On the contrary, researchers will frequently need to exercise extreme care in the selection of controls. Many studies do not require frequent observation, and very few require the controls to be literate.

131. A: When a hospital administration decides on strategy, this information should be shared with employees, patients, and the community. Indeed, a hospital’s strategic decisions should be shared with any interested parties. However, there are occasional situations in which the facility will need to keep information confidential. For instance, there may be legal reasons for failing to disclose a planned merger with another healthcare provider. However, a hospital will benefit from transparency more often than not. Research suggests that transparent organizations win more buy-in from employees, and more trust from patients. In addition, openness about strategy can elicit helpful criticism.

132. C: Applying the central limit theorem means that the administrator will assume that a sample is representative of the department as a whole. The central limit theorem asserts that when a sufficiently large sample is taken, its characteristics can be expected to represent the entire population. For this theorem to hold, the sampling technique must be appropriate to the subject.

133. B: One common problem in labs with low turnover is narrow specialization by technicians. When technicians are unable to fulfill multiple duties within a laboratory, it becomes more difficult for the lab to operate at peak efficiency. The best model is for technicians to specialize in one area but be capable of performing several, if not all, of the other tasks.

134. B: Frequent benchmarking is important in lean service because it prevents an organization from failing to react to external changes. Lean service providers are in constant contact with the outside world through their customers, but in some cases they may be slow to acknowledge changes in the market. Benchmarking highlights any important external factors and brings them to the attention of management.

135. A: Root cause analyses most often reveal that mistakes are the result of a series of small errors. Moreover, mistakes and system failures are likely to be predicated on a series of small and often latent errors. This is one reason why it is impossible for front-line practitioners to eradicate errors through diligence and great effort. It is instead necessary for administrators and quality improvement managers to examine processes in their totality and eliminate sources of error.

136. A: The strongest basis for practice is systematic reviews of randomized clinical trials. These reviews provide the most objective and advanced medical knowledge. The other three answer choices represent solid but fallible sources of information. In particular, practitioners should be skeptical about the views of opinion leaders unless these views are clearly based on established clinical research.

137. D: Research suggests that people make fewer errors when they work in a team. There are a few reasons for this. First, the desire to demonstrate competency in front of peers encourages people to attend more fully to their tasks. Also, the members of a group are able to correct one another. People do tend to make more errors when they work creatively, although these errors often lead to insight and innovation. Multi-tasking, however, increases the likelihood of error
without providing any benefit. Research consistently shows that people who perform more than one task at the same time are less successful at each of the tasks.

138. C: A brief analysis of interventions for stroke is likely to be relatively unhelpful because research has yet to discover an effective standard treatment. Several treatments may be effective in certain circumstances. A large percentage of stroke victims die almost immediately, and many are elderly and already suffering from other ailments, both of which are factors that increase the difficulty of effective intervention analysis.

139. D: Hospitals pay special attention to blood transfusions because they are complicated and dangerous. Even though transfusions are performed frequently, they are still prone to occasional errors. These errors can be injurious and even fatal. Not all transfusion errors will be detected, however. Hospitals should establish clear protocols with significant rechecking for blood transfusions.

140. D: The main difference between a dashboard and a scorecard is that a scorecard describes past performance, while a dashboard depicts performance in real time. Indeed, a dashboard is so-called because it is analogous to the dashboard of a car, which delivers current metrics. Dashboards are better for making quick adjustments, whereas scorecards are better at providing a comprehensive, clear-eyed view of performance over the recent past.