SMG 2020

FDA STAFF MANUAL GUIDES, VOLUME III - GENERAL ADMINISTRATION

FDA OFFICIAL COUNCILS AND COMMITTEES

FDA QUALITY SYSTEM FRAMEWORK FOR INTERNAL ACTIVITIES

Effective Date: April 22, 2014

1. PURPOSE

A Quality System is a set of formal and informal business practices and processes that focus on customer needs, leadership vision, employee involvement, continual improvement, informed decision making based on real-time data and mutually beneficial relationships with external business partners to achieve organizational outcomes.

The FDA uses quality systems to control, assure, and improve the effectiveness of the processes used to deliver a quality product or service. This Guide defines the essential quality elements for management to address in any quality system that controls an internal FDA regulatory activity and relevant management, facility, purchasing, information technology and environment, safety and health.

This document is intended to assist FDA management and staff to:

- review their current quality activities,
- identify quality system elements that may already exist, and

- identify additional elements needed to implement a quality system.

2. POLICY

a. FDA components use the Quality System Framework requirements established in this Guide (1) to design and develop processes, products, and services related to FDA&'s regulatory mission and to critical management and administrative support services, and (2) to improve and strengthen product and service quality.

b. The scope of application (see Section 7b) is determined by Office and Center management unless directed through the agency strategic plan.

c. The products that are governed by this quality system standard are the work products that FDA creates -- not the products that FDA regulates.

3. RESPONSIBILITY

a. FDA Management Council -- FDA senior managers, as represented on the Management Council or by equivalent Office of the Commissioner, are responsible for

1. supplying resources for (i) quality system-related training and (ii) cross-cutting implementation initiatives,

2. directing agency-wide communications regarding quality systems,

3. requesting and reviewing implementation progress reports, and

4. approving substantive changes to the QS Framework.

b. Office and Center Directors -- The Management Council members, acting as individual Center Directors, Associate Commissioners and/or Office Directors, are responsible for

1. supplying resources to implement mandated and selected projects,

2. communicating quality system policies and plans to their employees, and

3. reporting implementation progress to the Management Council for mandated projects (see Section 7b).

c. Management Council Subcommittee - The Management Council charters (see Section 7b) a subcommittee -- FDA Quality Resource and

Guidance Team (QRGT) -- as an agency-level group of quality experts from all FDA components. The QRGT is responsible for

1. providing resource materials and guidance to the managers and staff of FDA components implementing or improving a quality system,

2. updating SMG 2020 as needed and supplying recommendations to the Management Council regarding substantive Framework revisions, and

3. assisting the Management Council with developing agency-wide implementation plans and communications

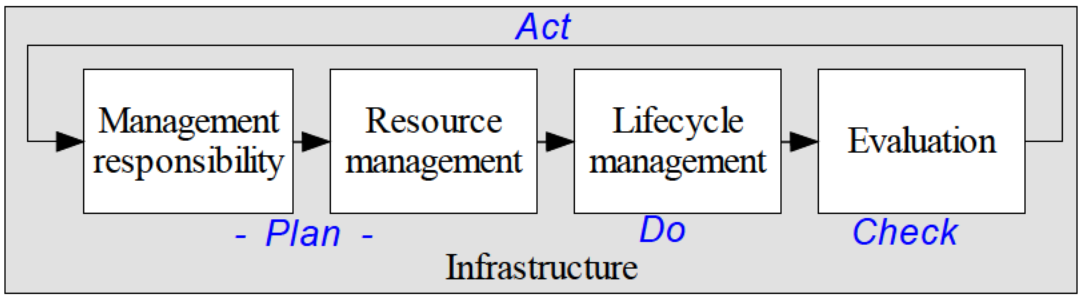
4. BACKGROUND

In June 2003, as part of FDA's "Pharmaceuticals for the 21st Century -- A Risk-based Approach" initiative, the FDA formed a subcommittee to develop a quality system framework for FDA pharmaceutical product quality regulatory activities. This SMG was the product of that subcommittee.

The FDA Quality System Framework provides a common set of definitions (Section 6) and the structural elements of a quality system (Section 5a). The format is in plain English, using as little jargon as possible. It is a generic, but flexible, state-of-the-art description that can accommodate the addition of other quality standards, legal requirements, and performance measurement tools.

5. QUALITY SYSTEM FRAMEWORK

a. Requirements - The FDA Quality System Framework is organized into four main components built upon a fifth Quality System Infrastructure component. The four components, or areas of responsibility, are Strategic Management, Resource Management, Lifecycle Management, and Quality System Evaluation. Each component is made up of several elements. The elements are implemented according to the listed criteria. It is the relationships between the elements that make the Framework a system.



0. Quality System Infrastructure 0.1 Define Quality System Scope 0.2 Build Quality System to Meet Requirements 0.3 Document the Quality System 1. Strategic Management 1.1 Provide Leadership 1.2 Review System Effectiveness 1.3 Identify Customers and Products/Services 1.4 Establish Policies, Objectives, and Plans 1.5 Structure the Organization 2. Resource Management 2.1 Develop Personnel 2.2 Purchase Materials and Services 2.3 Control Outsourced Work 2.4 Supply and Maintain Equipment 2.5 Provide Support Services	3. Lifecycle Management 3.1 Plan Work 3.2 Design New Products, Services, Processes 3.3 Accept Work 3.4 Perform Work under Controlled Conditions 3.5 Detect Problems before Product/Service Release 4. Quality System Evaluation 4.1 Monitor and Measure Selected Metrics 4.2 Work through Problems 4.3 Analyze Data for Trends 4.4 Assess Consequences 4.5 Conduct Audits 4.6 Address Recurring Problems 4.7 Anticipate Problems 4.8 Promote Improvement

0. QUALITY SYSTEM INFRASTRUCTURE

Note: The Infrastructure is the foundation for the Quality System Framework. Numbered as 'zero,' this component supports and interacts with all other components. Once you make the decision to develop a quality system, a foundation must be established to support your decision. These Infrastructure elements answer three questions: to what will the quality system apply? Which requirements will you meet? And how will you manage the documents needed for, or created by, the quality/work systems?

§ 0.1 Define Quality System Scope

(a) Define and document the scope of the organization's quality system in terms of the internal (FDA) work processes and work products/services that will be managed by the Framework elements.

(1) A quality system may be applied to operational activities (examples: new product review process and the resulting decision; compliance evaluation process and the warning letter and environmental safety and health management), as well as to

(2) administrative/management areas (examples: IT help-desk services, travel management, training course development).

(b) Identify outsourced work processes and products/services and include them in your scope if the outsourced work affects your product/service quality (*see §2.3*) (example: subcontracting FDA inspections to States).

§ 0.2 Build Quality System to Meet Requirements

Note: Identify where your requirements come from. A quality system focuses first on the effectiveness of meeting requirements, but may also focus on efficiency

(a) Design your quality system to meet

(1) your customer's stated and implied needs,

(2) applicable regulatory requirements, and

(3) other requirements identified by your organization, the FDA, or other government agencies.

(b) Document the source(s) of your requirements (examples: 21CFR 10.115 Good Guidance Practices, Open Government Directive, ISO 17025:1999 laboratory competency standard, OMB Circular A-123, 21 CFR 10.70 Documentation of significant decisions in administrative file; 21 CFR 10.75 Internal agency review of decisions).

(c) This Quality System Framework document is your source of quality system requirements. If specific quality/content areas are not relevant to your work, you may exclude them, but you need to document the exclusions and explain why they are unnecessary to your unit's operations and/or customer or other applicable requirements. Given our systems approach to quality, these exceptions should be rare.

§ 0.3 Document the Quality System

Note: You will need to document the quality system to "say what you do" including the scope items above, policies established to meet the quality system elements, as well as processes and procedures established to run the quality system and to do the work. Other documentation "proves what you did" via data or records which provide evidence of meeting work requirements and quality system requirements.

(a) Document your quality system in a 'quality manual' or equivalent vehicle to provide clear organizational guidance and logical evaluation.

(1) Include

i) the scope of the quality system(see §0.1);

ii) the standard of quality that will be used (*see §1.4(a)*), and the supporting objectives (*see §1.4(b)*), (a reference is acceptable);

iii) the organization's policies to implement the quality system criteria; and

iv) the procedures needed to establish and maintain the quality system (references are acceptable)

(2) Since this is a policy directive, it should be created at the top level of the organization.

(b) Establish clear procedures for issuing, revising, replacing, filing, canceling, and archiving quality system directives (SOPs, instructions, interim guidance, forms, external manuals, etc.) so that employees can readily find the relevant version when needed. Such procedures ensure that quality system directives are

(1) reviewed and approved for adequacy before initial or revised use,

(2) available at point of use with suitable identification of revision status and changes,

(3) legible if copied or if handwritten amendment is allowed,

(4) periodically reviewed for adequacy and revised as needed (consider a formal process for users and other interested parties to submit change requests for directives),

(5) identified as such when superceded or cancelled to prevent unintended use, and

(6) stored as records when superceded or cancelled.

(c) Develop and document record control procedures to complete, secure, protect, and archive records, including data, which act as evidence of work and of quality system activities. Record control procedures conform to Staff Manual Guide 3291.1 Records Management Policy, so that records are

(1) complete, legible, and identified;

(2) amended only by authorized personnel without obscuring initial data;

(3) stored and protected to preclude damage, loss, or unauthorized access or amendment;

(4) retrievable when needed; and

(5) retained and disposed of according to approved record schedules.

1. Strategic Management

Note: Senior management's leadership and participation is critical for this area of responsibility. However all levels of management are involved depending on their organizational responsibility and influence. The elements below show how management provides evidence of commitment to the quality system.

§ 1.1 Provide Leadership

(a) Align quality system plans with the FDA/organizational strategic plans to ensure that they support mission and strategies. (*see §1.3*).

(b) Determine the portions of the quality system to be implemented, set priorities, and develop action plans (*see §0.2(c)*).

(c) Provide strong, visible support of quality system by

(1) consistently modeling the behavior that demonstrates a commitment to quality;

(2) actively participating in system design, implementation and monitoring, including management review(*see §1.2*);

(3) advocating continual improvement of work and the quality system; and

(4) committing necessary resources or, if resources are inadequate, senior management defines priorities for resource use.

(d) Ensure the entire organization adopts the same elements in the quality system.

(e) Ensure internal communication on quality issues at all levels in the organization.

(f) Foster a culture of quality that motivates everyone in the organization to be proactive in meeting and exceeding quality expectations.

§ 1.2 Review System Effectiveness

Note: Senior managers regularly review the quality system to ensure that it is working effectively, to take action for improvement, to increase efficiency, and to hold themselves and the organization accountable.

(a) Conduct management reviews of the quality system according to a planned schedule:

(1) reviews are more frequent for developing and immature systems;

(2) minimum review frequency is once per year; and

(3) outside of scheduled reviews, a suggested best practice is to include the quality system as a standing agenda item in general management meetings.

(b) Senior management reviews the quality system to ensure its continuing suitability, adequacy, and effectiveness.

(1) Reviews include consideration of

i) the appropriateness of the quality policy and quality objectives (*see §1.4 (a&b)*);

ii) the suitability of policies and procedures for work and the quality system;

iii) the results of audits and proficiency tests;

iv) customer feedback, including complaints;

v) the analysis of process and product/service metrics;

vi) the status of actions to prevent recurring or potential problems;

vii) any follow-up actions from previous management reviews; and

viii) any changes in business practices or environment that may affect the quality system, and the volume or type of work.

(2) Review outcomes may include

i) improvements to the quality system and related quality processes;

ii) improvements to work processes and products/services; and

iii) realignment of resources.

(3) The results of management reviews are recorded and actions are tracked.

§ 1.3 Identify Customers and Products/Services

(a) Identify the organization's customers and, when applicable, the organization's relationship(s) with regulated industry (*Note: see Section 7. References (b)(1) of this Guide*).

(b) Solicit input from customers and understand the customers' needs with the aim of meeting their needs and other

requirements (*see §3.3*) and achieving their satisfaction (see §4.1).

(1) Confirm customer needs directly with the customer, even though requirements may have been previously defined.

(2) Ensure sufficient means of communication with customers to support quality system activities (*see §3.3, 4.1 & 4.2(b)*).

(c) Confirm that product/service characteristics meet the customers' needs; if necessary, develop new products/services (*see §3.2*).

(d) Develop appropriate metrics to monitor and/or measure work processes and products/services (*see §4.1*).

(e) Ensure that personnel understand the impact of their activities on the product/service and the customer.

§ 1.4 Establish Policies, Objectives, and Plans

Note: Policies, Objectives, and Plans are vehicles to articulate senior management's shared vision to varying levels of the organization in a job-relevant context.

(a) Develop and/or identify your organizational quality policy. Senior management ensures that the quality policy.

(1) aligns with the FDA mission;

(2) commits to meeting requirements and improving the quality system;

(3) proposes objectives to fulfill the quality policy;

(4) is revised as needed; and

(5) is communicated to, and understood by personnel, customers, and subcontractors (as applicable).

(b) Define quality objectives needed to implement the quality policy. Senior management ensures that the quality objectives

(1) are created at the top level of the organization (and other levels as needed) through a formal quality planning process (*see §1.4(c)*);

(2) are, and remain, aligned with the FDA and organizational strategic plans and the quality policy;

(3) identify best practices (i.e. benchmarking) to provide opportunities for continuous improvement;

(4) are supported by necessary resources and processes including environmental health and safety; and

(5) have measurable goals and are monitored regularly.

(c) Use quality planning to identify and allocate resources and define methods needed to achieve the quality objectives for a system, work process, product, or service. Senior management ensures that quality planning considers

(1) how to document the outputs in quality plans or operational and quality system directives;

(2) what action plans, operational processes, procedures, or methods are needed, including technical issues such as uncertainties, traceability, sampling and integrity, validation, and communication;

(3) what quality system processes are required;

(4) what resources are needed including manpower and fiscal budgets, facilities, equipment, authorizations, training, and information and conflict of interest protections;

(5) what actions and associated resources are necessary to provide a safe and healthy workplace and to ensure operations are conducted in an environmentally conscious manner;

(6) what metrics, criteria for acceptability, and records are needed; and

(7) continual improvement.

(d) Communicate relevant quality objectives and plans to personnel so that they understand how their work activities are aligned with strategic and quality goals.

§ 1.5 Structure the Organization

(a) Define the organizational structures that allow the organization to effectively meet customer needs and other requirements.

(b) Determine and document who has decision authority within the organization.

(c) Ensure that roles and responsibilities of personnel are defined and understood.

(d) Identify who has the daily responsibility and authority regarding product/service quality.

(e) Communicate to all employees their role, responsibilities, and authority within the system.

(f) Appoint a management representative with authority to manage the quality system and to report to senior management and customers on quality system issues.

(g) Identify quality system coordinators within the organization to support the management representative and to implement, operate, and assess the quality system.

2. Resource Management

§ 2.1 Develop Personnel

Note: Personnel need to be qualified. The involvement and support of personnel will result in improving both organizational and quality system effectiveness and efficiency.

(a) Define selection qualifications for the position(s) that are needed to complete the work.

(b) Develop and/or use a detailed position description that includes responsibilities and authorities and discuss with personnel so that level of empowerment is understood (*see §1.4(c) & 1.5(b)*).

(c) Provide training on

(1) FDA, organization, and unit orientation, including

i) mission and goals,

ii) ethics and conflict of interest, and

iii) information disclosure;

(2) policies, processes, procedures, and written instructions related to

i) work activities,

ii) the product/service,

iii) environmental management, and

iv) the quality system; and

(3) the key strategies and methods that support the desired work culture (team building, communication, change, behavior, etc.).

(d) Control the training process by

(1) evaluating training needs (*see §4.3 & 4.6*) through a planned process;

(2) providing training to satisfy the needs;

(3) incorporating relevant quality system linkages, including customer satisfaction, in the training material; and

(4) evaluating effectiveness of training, documenting any necessary re-training.

(e) Ensure that skills gained from training are incorporated into day-to-day performance. This may require

(1) additional certification, or

(2) specific authorizations to perform work activities.

(f) Maintain training, certification, and/or authorization records (*see §0.3(c)*).

(g) Encourage communication by acting upon suggestions, and developing empowered cross-cutting communities to share and improve common practices.

§ 2.2 Purchase Materials and Services

Note: This element concerns the purchase of items that will affect the quality of the product/service, for example: reference standard used in analytical analysis; calibration service used for equipment; contracts for scanning documents for FOIA; IT or personnel support.

(a) Clearly describe the material/service and quality specifications on the purchase requisition, considering

(1) traceability or authentication,

(2) requirements for service personnel,

(3) need for contract management of services,

(4) requirements for receipt approval, and

(b) Select vendors based on the quality specifications, considering

(1) vendor quality system requirements,

(2) vendor commitment to environmental management.

(c) Verify the accuracy of the received product/service and, in specific cases, test the product/service for conformance.

(d) Evaluate vendor performance and maintain records regarding performance.

(e) Handle and store quality critical purchased materials to maintain their integrity.

§ 2.3 Control Outsourced Work

Note: Outsourcing differs from purchasing. In outsourcing, a third party is performing the work processes that are part of FDA's inherent responsibilities, for example: subcontracting with States to perform FDA inspections; an academic laboratory performing a regulatory analysis; contractors wins under an A-76 study.

(a) When purchasing work services from a sub-contractor follow the same procedures as for Purchasing.

(b) Ensure that the sub-contractor is qualified:

(1) the subcontractor's personnel are adequately trained,

(2) monitored for performance according to their quality system, and

(3) ensure that subcontractors' and FDA's quality standards do not conflict.

(c) Inform your customer of the need to use a sub-contractor and seek approval if necessary.

(d) Ensure requirements are established in the contract in terms of producing a work product/service that supports FDA's mission, maintains operational efficiency, safeguards the natural and workplace environments, and includes provisions specifying recourse if these contract objectives are not fulfilled

(e) Ensure FDA project officers are familiar with the contract and specific requirements.

§ 2.4 Supply and Maintain Equipment

Note: Equipment is handled according to two categories: process equipment and measuring/test equipment. Process equipment in FDA includes copiers, cameras, or computers. Measuring and test equipment includes laboratory equipment and investigative equipment and is more tightly controlled.

(a) Determine and acquire process and/or measuring and test equipment needed to ensure proper completion of the product/service.

(1) If equipment is purchased, use purchasing criteria (*see §2.2*).

(2) Allocate resources to support relevant installation, maintenance, safety, environmental protection, and training.

(b) Uniquely ID (number) the equipment if traceability is required by the work process.

(c) Develop procedures to ensure that measurement and test equipment, including software,(*see §3.5*) is

(1) proven to meet specifications before use;

(2) maintained appropriately;

(3) calibrated appropriately where not doing so could adversely affect the product/service, and so that

i) calibration is traceable to international or national standards, and recorded, or

ii) if no standards are available, the chosen verification method is recorded; and

iii) the calibration status is noted on the equipment.

(4) properly adjusted before each use; and

(5) protected from damage or inappropriate adjustments during handling, maintenance, or storage.

(6) consistent with the lifecycle of the equipment

i) determine what is required to replace the equipment

ii) determine the disposal procedures

iii) determine the percentage of it that can be replaced or recycled

iv) when looking to replace, find selected units that are of high caliber and that meet energy efficient standards i.e., use recycled parts, energy efficient or is recyclable at the end of its utility whenever possible and explain why when it is not possible to meet these resource criteria.

(d) If during maintenance, calibration, or use, any testing and measuring equipment does not meet specifications, then refer to §4.2.

§ 2.5 Provide Support Services

(a) Ensure sufficient administrative support staff and administrative services are in place to support the quality system processes.

(b) Ensure sufficient IT resources to complete work and to support the quality system (includes software, hardware, and help services).

(c) Ensure sufficient monetary resources for supportive services such as training, contracts, or consulting.

(d) Ensure availability of the appropriate facilities in which to conduct quality work, including sufficient utilities, waste management support, and safety features and equipment.

(e) Ensure adequate security to protect personnel, information, and portable resources.

(f) Ensure that the work environment is conducive to effective performance by meeting physical, social, psychological, and environmental needs.

3. Lifecycle Management

Note: The product/service lifecycle is made up of those activities that plan, produce, and measure the FDA work product. The product lifecycle is what is managed by the quality system.

§ 3.1 Plan Work

Note: Make sure that the planning of the quality of work processes and products/services is consistent with other quality planning activities (see§1.4(c)). Planning can be documented in 'quality plans,' SOPs, etc., as suited to your organization.

(a) Establish who is responsible for planning work processes and products/services in your organization.

(b) Use a consistent planning approach for all your processes and products/services: if a similar process is used in other areas of your organization, ensure that the processes are consistent; if a similar process or product/service is used in other parts of the FDA, promote consistency.

(c) Document work processes as process maps so that inputs, inter-related activities, and outputs are identified.

(d) Prior to the implementation of a new or modified work process, document your planning for

(1) the quality objectives/goals for the process or product/service consistent with overall organization's quality objectives (*see §1.4(b)*);

(2) the resources and facilities needed including the potential environmental impact;

(3) the need for documented procedures to carry out the process;

(4) the identification of the process owner who will maintain and update the process as needed;

(5) the quality control measures and necessary data collection and monitoring (*see §4.1*) and, if equipment is used, plan for appropriate controls (*see §2.4*);

(6) any validation activities including operational specifications and acceptance criteria;

(7) the impact on related process, functions, or personnel; and

(8) which records will prove the implemented process was followed and the expected activity/product/service quality is obtained (*see §0.3(b)*).

§ 3.2 Design New Products, Services, Processes

Note: This element is applicable to new and/or reengineered processes/products/services, for example: new authority for civil money penalties; new process for electronic submissions; new analytical method for chloramphenicol.

(a) Create a plan that includes authorities and responsibilities; the design and development stages; and appropriate review, verification, and validation.

(1) If different groups are involved in design and development, document responsibilities to avoid overlap or omission of key duties and ensure that the groups communicate effectively, through regular meetings, or by other means.

(2) Plans are updated as needed throughout the design process.

(b) Control the design inputs, outputs, review, and verification.

(1) Inputs are developed from customer needs and other requirements; reviewed for adequacy and integrity; and recorded.

(2) Outputs satisfy the input requirements; supply information for any required materials, equipment, etc.; specify production controls; and are approved before release.

(3) Reviews are done by personnel from the functions affected in order to assess the design's ability to meet requirements, identify problems, and propose actions; and are recorded.

(4) According to the design plan, the outputs are verified against the design inputs and records are maintained.

(c) Carefully determine the potential impact of the new product, service, or process on the natural and work environments.

(d) Before use, perform and record validation to ensure the needs of the intended application are met.

(e) Maintain change controls throughout the design process by identifying and recording changes and ensuring changes go through the full design process.

§ 3.3 Accept Work

Note: The criteria for accepting work into your organization focuses on knowing requirements, assessing capabilities to meet them, and keeping track of any changes. A clear understanding of organizational priorities is important when resources are scarce.

(a) Determine requirements for process and product/service, including those

(1) set by the customer,

(2) needed for proper product/service use but not specifically stated by the customer,

(3) required by statute or regulation,

(4) suggested by potential impacts to the natural and work environments,

(5) consistent with any other FDA or organizational requirements.

(b) Review the organization's capability to meet requirements prior to starting work and record the results of the review.

(c) Track any changes in requirements; and as needed,

(1) update documentation such as plans, procedures, or reports; and

(2) notify appropriate personnel of changes.

(d) Communicate with customers regarding work product/service changes initiated by the organization, amendments and complaints according to planned methods (*see §1.3(b)(2)*).

(e) Review incoming individual work projects and assign work projects to qualified personnel.

§ 3.4 Perform Work under Controlled Conditions

(a) Ensure availability of proper documentation about the work project and relevant directives.

(b) If using purchased supplies or outsourced material, ensure appropriate verification was performed (*see §2.2 and §2.3*).

(c) As appropriate, uniquely ID (number) the product and identify the product's status to prevent inappropriate use or release.

(d) Ensure that the organization can trace the history of the product/service, as appropriate, in regard to personnel, materials, equipment, chronology, etc. Consider requirements for

(1) equipment and calibration (*see §2.4*), and

(2) analytical reference standards and materials (*see §2.2(a)(1)*).

(e) If the customer supplies the organization with information or material (example: trade secret information), determine

(1) if it needs protection and, if so, how to identify and safeguard the property; and

(2) how to notify the customer if the property is unsuitable, lost, or harmed; and maintain records of any notifications.

(f) Protect the in-process and final product from unauthorized amendment, loss, or harm before delivery to the customer (example: maintaining regulatory-sample integrity).

§ 3.5 Detect Problems before Product/Service Release

Note: Problems may be detected during the work process by the employee or during work checks by a supervisor or peer. Not all deviations from SOP will result in product/service defects, however they have to be documented and handled.

(a) Implement monitoring and measuring of work processes and the work product/service as planned (*see §3.1(d)*) to ensure that the product conforms to requirements.

(b) If using equipment as part of the monitoring or measurement method, use controlled devices (*see §2.4*).

(c) Use nonconformance resolution process (*see §4.2*) when problems or deviations are found.

(d) Ensure that processes for product/service release are complete and recorded.

4. Quality System Evaluation

§ 4.1 Monitor and measure selected metrics

Note: 'Metrics' are the data selected to provide information needed about the quality of a process or product/service.

(a) Plan and develop processes to monitor, measure, and analyze (include methods and/or statistical techniques) to

(1) Determine if the product/service meets requirements,

(2) demonstrate that the quality system and work processes are operating according to plans, and

(3) identify opportunities for quality system improvements.

(b) Monitor customer satisfaction to check the customer's perception of the organization's performance in meeting requirements. The organization

(1) determines methods and analyses for customer data, and

(2) has a procedure for recording and responding to customer complaints (*see §4.2, 4.6*).

(c) Monitor, and measure as needed, the quality system and work processes and products/services to determine if the processes provide the planned result and that the product/service meets requirements. The organization

(1) determines the appropriate metrics to be collected;

(2) determines the appropriate collection methods, including

i) required documentation,

ii) when in the product/service lifecycle metrics will be collected,

iii) assigning measurement and monitoring activities, and

iv) what records are needed; and

(3) uses documented problem resolution procedures (*see §4.2 and §4.6*) to make sure the product/service conforms to requirements; and

(4) may also include metrics reflecting management issues such as resource costs and efficiency.

(d) Ensure that methods are in place to encourage and analyze suggestions for improvement.

§ 4.2 Work through Problems

Note: Once a problem, or "nonconformance," is identified in a work process or product/service, it must be resolved before continuing the activity or releasing the product/service.

(a) If an individual work process or product/service does not meet requirements (i.e. is nonconforming), then

(1) identify or segregate the product so it is not used or released; and

(2) choose a remedial action:

i) correct the nonconformance;

ii) with proper authorization, allow the activity/product/service to proceed with the problem documented for the customer's knowledge;

iii) use the product/service for another application where the nonconformance is inconsequential; or

iv) abandon the activity/product/service.

(b) Customer complaints are potential nonconformances and need to be investigated.

(c) Develop and document a procedure to

(1) define responsibilities for halting and resuming work;

(2) record the nonconformance, probable cause, and remedial action taken;

(3) ensure that corrected work is re-examined for conformance;

(4) determine circumstances that require communication with the customer about the problem; and

(5) assess the significance of the nonconformance (*see §4.3 and §4.4*).

(d) If a nonconformance is significant based on consequences, frequency, cost, efficiency, safety, etc., then evaluate the need to prevent recurrence (*see §4.6*).

§ 4.3 Analyze Data for Trends

(a) Collect necessary data from monitoring, measurement, complaint handling, or other activities, and track data over time, as appropriate.

(b) Analyze data for correlations and root causes related to operating the quality system. As needed, analysis includes use of appropriate tools:

(1) methods such as control and run charts, cause/effect diagrams, histograms, etc. (*see Reference #11*); and

(2) appropriate statistical techniques.

(c) Based on possible consequences (*see §4.4*), use the information generated for problem resolution or problem prevention (*see §4.7, 4.6*) resulting in system improvement for

(1) customer/stakeholder satisfaction,

(2) product/service requirements,

(3) process trends,

(4) supplier performance,

(5) progress toward quality objectives, and

(6) efficiency.

§ 4.4 Assess Consequences

Note: Management assigns priorities based on the consequences of action or inaction—otherwise known as risk assessment. The model below is the same as used in regulatory risk assessment (see References 8, 9, and 10).

(a) Engage appropriate parties in assessing the consequences, including customers, FDA personnel, and/or other stakeholders.

(b) Use your organization's risk assessment model, which includes

(1) defining the issues and putting them into context (interactions with other issues),

(2) analyzing the risks and benefits associated with the problem,

(3) examining options for addressing the risks,

(4) developing a strategy by deciding which options to implement,

(5) taking actions to implement the strategy, and

(6) evaluating the results.

(c) This is a reiterative process: repeat if new information is developed that changes the need for, or nature of, risk management.

§ 4.5 Conduct Audits

Note: Audits of FDA are internal or external. In the FDA, there are generally two levels of internal auditing: the unit auditing itself and the organization auditing the unit. Examples of external auditors are the General Accounting Office, other regulatory agencies, or a foreign government. (For audits of subcontractors, see §2.3.)

(a) Conduct internal audits at planned intervals to evaluate if

(1) the quality system

i) conforms to the FDA Quality System Framework, and

ii) is effectively implemented and maintained;

(2) the work processes and products/services meet established requirements.

(b) Develop and document internal audit procedures, aligned with any FDA audit procedures, to

(1) ensure that an audit schedule is planned, taking into account

i) responsibility for planning,

ii) the relevant importance of the quality system processes and work processes/products/services,

iii) the results of previous audits and corrective actions, and

iv) the need to conduct annual audits of the quality system including selected work processes in accordance with the quality manual or equivalent vehicle *(see §0.3a)*;

(2) train auditors in objective evidence gathering, responsibilities, and auditing procedures;

(3) define auditing activities that include

i) scope,

ii) methodology,

iii) selection of impartial auditors, and

iv) conduct (opening meetings, interviews, closing meeting and reports); and

(4) record audit finding and assign responsibility for follow-up.

(c) Develop and document external audit procedures (see FDA SMG 2830.2) to

(1) ensure that audit scope, methodology, auditors, and timetable (as available) are communicated within the organization; and

(2) ensure that the organization has appropriate personnel on hand to respond to the audit.

(d) For both internal and external audits, ensure that managers responsible for the areas audited take timely action to

(1) resolve audit findings through

i) clarification with the auditor to remove an inappropriate finding, or

ii) corrective action(s) (*see §4.6*); and

(2) inform the customer of any impact of the findings on previously released products/services.

(e) Ensure that follow-up activities are completed, verified, and recorded.

§ 4.6 Address Recurring Problems

Note: 'Corrective action' is a reactive tool for system improvement to ensure that significant problems do not recur. The corrective action should be facilitated by managers with active participation

and input from employees involved in the process and/or product/service affected.

(a) Develop and document a corrective action procedure to ensure that

(1) the need for action is evaluated relevant to the possible consequences (*see §4.4*),

(2) the root cause of the problem is investigated,

(3) possible actions are determined and a selected action is taken in a timely fashion, and

(4) the effect of the action taken is evaluated.

(b) Determine actions needed to prevent problem recurrence. Use information from

(1) nonconformance reports,

(2) employee feedback (e.g., suggestions and complaints)

(3) customer complaints,

(4) internal and external audits,

(5) data and risk analyses related to work and quality system processes, and

(6) management review decisions (*see also §1.2*).

(c) Maintain records of corrective actions taken.

§ 4.7 Anticipate Problems

Being proactive is an essential tool in quality management—"prior planning prevents poor performance" is the essence of 'preventive action,' for example: succession planning, training, capturing institutional knowledge as well as personnel, policy, and process changes

(a) Develop and document a preventive action procedure to ensure that

(1) possible problems can be identified,

(2) root causes can be determined,

(3) the need for action is evaluated relevant to the possible consequences (*see §4.4*),

(4) possible actions are determined and an action selected and taken,

(5) the selected action is evaluated, and

(6) the system is monitored for the effectiveness of the preventive action.

(b) Determine actions needed to anticipate problems and to prevent their occurrence. Use information from

(1) Relevant lessons learned from prior experiences

(2) reviews of customer and employee feedback and satisfaction,

(3) data and risk analyses related to work and quality system processes, and

(4) changes in the scientific, legislative, and regulatory environment.

(c) Maintain records of preventive actions taken.

§ 4.8 Promote Improvement

Note: Quality gurus may use the term "continual" improvement to indicate recurring, step-wise, changes. They feel that the common term "continuous improvement" incorrectly implies non-stop, constant change—an unrealistic standard. Let's not split hairs—improvement is accomplished through small steps related to improving existing practices or through large changes such as reengineering.

(a) Improve the effectiveness and efficiency of the quality system through the quality activities described in this Framework:

(1) the articulation of the quality policy and communication to personnel and customers (*see §1.4(a)*),

(2) development and revision of quality objectives (*see §1.4(b)*),

(3) data analysis (*see §4.3*),

(4) internal and external audit results (*see §4.5*),

(5) corrective actions (*see §4.6*),

(6) preventive actions (*see §4.7*), and

(7) management review (*see §1.2*).

(b) Use other improvement processes as relevant:

(1) incorporate lessons learned into other projects,

(2) actively seek improvement in processes and products/services,

(3) increase personnel participation through additional empowerment and through rewards/recognition, and

(4) use project management to control change.

(c) Coordinate the involvement of senior management in the management review process (*see §1.2*)

(end of requirements list)

b. Implementation Considerations - This section describes some considerations for implementing a quality system, and is not meant to be an exhaustive discussion.

1. <u>Work Quality</u>: FDA managers should reassure employees that the application of a quality system does not imply that quality work is not currently being done; rather the application of a quality system offers a more effective way for our work to be conducted and to be delivered to our customers. Initial change may be challenging and work may slow temporarily, but the purpose of the quality system is to improve our processes thereby making FDA more effective and efficient. Quality system activities, such as internal audits, can lead to continual improvement.

2. <u>Adaptability</u>: This Framework describes the minimum requirements for a quality system that can be applied to FDA activities.

- Depending on specific circumstances, developing any individual quality system may benefit from supplemental elements. For example, a laboratory quality system will require additional elements for proficiency testing and measurement traceability. For CDRH an example would be to have additional requirement concerning regulatory action such as Warning Letter and Recall processes. Many elements of a quality system exist within FDA. At the same time, FDA would benefit from the use of all the elements in the Framework to design a complete quality system. Emphasis on individual elements and the timing of their implementation may vary depending on the nature of the FDA work product or service being provided.

- A quality system may be implemented in an entire organization or in a single unit. Unit implementation should be carefully tied to organizational goals.

3. **Leadership:** A strong, clear mandate from the highest level of management, backed up with their active participation, is required for a quality system implementation effort to succeed. Employees at all levels within an organization benefit from seeing management practice the same principles employees are being directed to implement. Staff will support a system that they see is actively and consistently supported and practiced. Senior leaders must create a meaningful vision, build a trusting environment, and model desired behavior. Each Senior leader should strive to be a champion of quality systems.

4. **Roles:** The role of management is to be accountable for the quality system. All levels of managers and employees should have the opportunity to participate in quality system development and activities.

    - Senior management develops the strategic plan and is responsible for the quality system from its development through completion of management reviews.

    - Middle management implements the quality system. They are responsible for area specific quality policies and for system improvement activities.

    - Quality management support staff ensures the effective implementation of the quality system to include the functions of management, operation performance, internal audits, verification and validation.

    - First-line managers use the tools created by the quality system (training, SOPs, checklists, etc.) to manage their day-to-day work.

- Employees also use the quality system tools and are responsible for monitoring their own work to ensure that all quality requirements are satisfied. Employees throughout the Agency are empowered to utilize their knowledge and experience to propose corrective action and continual improvements for the quality system.

5. **Teamwork:** A key strength of a quality system is the teamwork or participative management used to address issues and to continuously improve. Management must create a supportive and empowered working environment to successfully implement a quality system. Establishing good teamwork as the "norm" increases productivity, maximizes the strengths of the individuals, and allows employees to learn from each other.

6. **Communication:** Timely and clear communication is essential. People need to know what is expected of them and how their job fits into the larger mission of the organization. Communication includes facilitating discussions to ensure everyone is heard, attentively listening when people are expressing their viewpoints, and being receptive to the communication. Communication needs to flow in all directions: up, down, and laterally.

7. **Metrics:** Choosing and properly utilizing metrics is one of the biggest challenges to a successful quality system and may be one of the most overlooked elements of quality efforts. Measurements help determine where improvements can be made. Selecting meaningful and motivating metrics is important to a successful quality system. They are used to improve the system not to blame or criticize. Forethought in identifying what the metrics will measure and what you wish the metrics to tell you is vital. Be clear about what you are measuring and why.

8. **Documentation:** Relevant and effective documentation is a vital element of a quality system. At the same time, one of the most common mistakes in implementing quality systems is over-documentation. Develop new documents and records only where necessary. Make sure that the documentation is used and useful. Many required documents already exist: FDA Staff Manual Guides (SMG), CBER Standard Operating Procedures and Policies (SOPPs), CDER Manual of Policies and Procedures (MAPPs), etc. Documents are "alive"; they evolve as your processes evolve.

9. **Cost:** The costs of a quality system must be viewed as a necessary investment in a stronger FDA. A cost savings is almost always realized after establishing a quality system through greater efficiency, higher

employee satisfaction and/or a reduction of work. However, there are costs associated with implementation, particularly during start up and the early learning phase. Much of the initial cost will come in the form of employee time devoted to designing, documenting, teaching, and learning the new system.

10. **Tools:** There are many tools available in the business arena that you may find helpful when implementing a quality system to your process. Some of these tools are listed in the reference section of this document. A critical tool is the software used to support your quality system. Common FDA-wide software would be the most beneficial.

6. DEFINITIONS

In order to gain a common understanding of a quality system as a whole, the following terms are used throughout the paper. In an attempt to make the definitions jargon-free and meaningful to FDA staff, these definitions may be slightly different than those commonly used among the quality "gurus." The definitions are not arranged alphabetically but in the logical order of use in designing a quality system. Attachment A has definitions of other terms used in this Guide. (*Note: see Reference #1, Appendix A for examples and implementation tips for the terms defined below*.)

a. Product/Service - the intended results of activities or processes; products/services can be tangible or intangible.

b. Customer - a person or organization (internal or external) that receives a product or service anywhere along the product's life-cycle.

c. Stakeholders - an individual or organization having an ownership or interest in the delivery, results, and metrics of the quality system framework or business process improvements.

d. Quality - a measure of a product's or service's ability to satisfy the customer's stated or implied needs.

e. Quality Policy - a statement of intentions and direction issued by the highest level of the organization related to satisfying customers' needs. It is similar to a strategic direction that communicates quality expectations that the organization is striving to achieve.

f. Quality Planning - a management activity that sets quality objectives and defines the operational and/or quality system processes and the resources needed to fulfill the objectives.

g. **Quality Objectives** - specific measurable activities or processes to meet the intentions and directions as defined in the quality policy.

h. **Quality System** - formalized business practices that define management responsibilities for organizational structure, processes, procedures, and resources needed to fulfill product/service requirements, customer satisfaction, and continual improvement.

i. **Quality Management** - accountability for the successful implementation of the quality system.

j. **Quality Plan** - the documented result of quality planning that is disseminated to all relevant levels of the organization.

k. **Quality Control** - the steps taken during the generation of a product or service to ensure that it meets requirements and that the product or service is reproducible.

l. **Quality Assurance** - proactive and retrospective activities that provide confidence that requirements are fulfilled.

m. **Continuous Improvement** - ongoing activities to evaluate and positively change products, processes, and the quality system to increase effectiveness.

7. REFERENCES

a. **Framework Development** - This section provides references to the original Framework Subcommittee report and references used to develop it.

1. *Report on FDA Quality System Framework for Pharmaceutical Product Quality Regulation Activities* (FDA cGMP Initiative: Quality System Framework Subcommittee, January 2004)

2. *Criteria for Performance Excellence,* Business (Baldrige National Quality Program, NIST 2003) http://baldrige.nist.gov/PDF_files/2003_Business_Criteria.pdf

3. *ANSI/ISO/ASQ Q9000-2000: Quality management systems – Fundamentals and vocabulary*, (American Society for Quality, 2000)

4. *ANSI/ISO/ASQ Q9001-2000: Quality management systems – Requirements* (American Society for Quality, 2000)

5. ANSI/ISO/ASQ Q9004-2000: *Quality management systems – Guidelines for performance improvement* (American Society for Quality, 2000)

6. *ISO 14001-2004: Environmental management systems – Requirements with guidance for use*

7. *ANSI/AIHA Z10-2005: Occupational Health and Safety Management Systems*

8. *ANSI/ISO 17025-2005: General requirements for the competence of testing and calibration laboratories* (American Society for Quality, 2005)

9. *CMMI-SE/SW, V1.1: Capability Maturity Model Integration for Systems Engineering and Software Engineering, Staged* Representation (Software Engineering Institute, Carnegie Mellon University, 2002) http://www.sei.cmu.edu/pub/documents/02.reports/pdf/02tr002.pdf

10. The Balanced Scorecard Institute: http://balancedscorecard.org

11. *Procedures For The Implementation of The Federal Managers' Financial Integrity Act (FMFIA);* (FDA Staff Manual Guide 2350.1)

12. Executive Office of the President, Memorandum for the Heads of Executive Departments and Agencies: Transparency and Open Government (January 2009). Available at: https://federalregister.gov/a/E9-1777

13. *Managing the Risks from Medical Product Use: Creating a Risk Management* Framework (U.S. FDA, 1999) http://www.fda.gov/oc/tfrm/1999report.html

14. *Framework for Environmental Health Risk Assessment – Final Report, Vol.1* (Presidential/Congressional Commission on Risk Assessment and Risk Management, 1997) http://www.riskworld.com/Nreports/1997/risk-rpt/pdf/EPAJAN.PDF

15. *Tutorials for Continuous Quality Improvement* (Clemson University, 1995) http://deming.eng.clemson.edu/pub/tutorials/

16. *Statistical Method from the Viewpoint of Quality Control* (Walter A. Shewhart, 1986, Dover Publications, New York)

b. Supporting FDA/Center/Office Documents - This section provides references to quality system implementation information developed by

FDA components. The FDA [quality committee] may add links as they are developed.

1. SMG 2020: Scope of Quality System Implementation in FDA

2. SMG 2010.1: Management Council Subcommittee: Quality Resource and Guidance Team

3. FDA Intranet quality systems page

4. ORA Quality Manual

8. EFFECTIVE DATE

The effective date of this guide is April 22, 2014.

9. Document History -- SMG 2020, FDA Quality System Framework for Internal Activities

VERSION #	STATUS (I, R, C)	DATE APPROVED	LOCATION OF CHANGE HISTORY	CONTACT	APPROVING OFFICIAL
3.0	Revision	04/22/2014	Request from contact	FDA Quality Resource & Guidance Team	Walter Harris, Chair, FDA Management Council
2.0	Revision	07/27/2006	FDA QTIPS eRoom	FDA Quality Resource Guidance Team	Janet Woodcock, Chair, FDA Management Council
1.0	Initial	08/19/2004	N/a	FDA Quality Resource Guidance Team	Janet Woodcock, Chair, FDA Management Council

Attachment A

Glossary of Additional Terms

These terms are provided to clarify their use in the Framework components, elements, and criteria. Any underlined words within a definition are also defined in the glossary. See the FDA Quality System Framework "Definitions" section for quality system terms.

Accountability – ultimate responsibility for action

Authority – power to command action; right to command or give a final decision (see also: responsibility)

Authorization – approved to take a certain action

Business Process Improvement (BPI) – the process includes awareness, assessment, alignment, action, and accountability to enhance the overall performance to improve productivity, customer satisfaction, and profitability.

Capability – ability of an organization, a system, or process to fulfill requested requirements

Correction – action to resolve specific nonconformance

Corrective action – reactive activity to prevent recurrence of detected nonconformance

Data – facts, especially numerical facts, collected together for reference or information (*see also: document*)

Defect/deficiency – absence of something necessary for completeness/fitness (*see also: nonconformance*)

Design and development – a set of processes to transform requirements into product/process characteristics

Deviation – variation from the standard (*see also: nonconformance*)

Directive – directions to be followed during standard operations; as per FDA SMG 3280.1, a written communication issued in an organized system to establish policy, organization, procedures, or responsibilities; to require action; or to set forth information needed for the effective operation of a system or program. A directive may be a policy memo, procedure, instruction or form. A directive may also be a guidance documents. (see also: document; policy procedure; instruction (*see also FDA SMG 3280.1*))

Document – (n) information and its supporting medium (*see also: data; directive; record*); (v) to write down, to provide evidence

Attachment A

Goal – objective or actions related to objective achievements that are quantified and measurable

Instruction – directive on how to carry out a task

Interim guidance –A temporary directive which is applicable for one time only or for a limited period of time.

Lifecycle – the activities that plan, produce, deliver, and service a work product

Management – the managers and supervisors in an organization who lead, direct, and oversee the organization; **Senior manager** – manager in the top levels of organization with responsibility for strategic direction; **Quality manager** – a program manager, independent of the unit producing the product, who conducts QA and/or QC activities on unit work products and reports findings to the unit Director.

Measure – determine dimensional or quantifiable metrics; objective evidence used to evaluate a process or performance (*see also: monitor*)

Metric – specific data selected as an indicator (*see also: monitor*)

Monitor – watch over; check systematically for the purposes of collecting metrics (*see also: measure; trend*)

Need – requirement

Nonconformance – an unfulfilled requirement; "nonconformity" is an equivalent term (*see also: deviation; defect; corrective action*)

Objective – desired achievements derived from policy (strategic or quality); something to be achieved or attempted; to achieve an aim, goal, target (*see also: goal*)

Organization – The entire FDA or a first echelon component of the FDA whose head reports directly to the Commissioner as per definitions in FDA SMG 1005.1

(**PDCA** – Plan, Do, Check, Act: a process for quality improvement, also known as the 'Shewhart Cycle' or the 'Deming Cycle'.)

Plan – formulation or organized method by which something is to be done

Policy – a directive setting out a course of action or principle

Preventive action – proactive activity to stop occurrence of a possible nonconformance

Procedure – directive on how to carry out an activity or process

Attachment A

Process – a set of interrelated activities (tasks, procedures, sub-processes) that transform inputs into desired outputs (product) (*see also: system*)

Project – a process with defined start and finish dates to achieve an objective; unique process, consisting of a set of coordinated and controlled activities with start and finish dates, undertaken to achieve an objective conforming to specific requirements, including the constraints of time, cost and resources

Unit – sub-part of an organization

Record – document stating results achieved or providing evidence of activities performed

Requirement – A need or expectation of the customer or other interested party that may be stated, implied, or compulsory resulting in product or process characteristics.

Responsibility – duty, action you are assigned to do; charge, trust, or duty, for which one is responsible (*see also: role; authority*)

Risk management – process of identifying, evaluating, selecting, and implementing actions to reduce risk to human health and to ecosystems. The goal of risk management is scientifically sound, cost-effective, integrated actions that reduce or prevent risks while taking into account social, cultural, ethical, political, and legal considerations. (*see Quality System Framework Reference section, #10*)

Role – position or function (see also: *responsibility*)

Support services - those processes that support daily operations and your product/service delivery but are not usually designed in detail; the support process requirements usually do not depend significantly on product/service characteristics (*see Quality System Framework Reference section, #1, p. 47*)

System – a set of interrelated or integrated processes to accomplish a purpose

(**Task** – a piece of work; portion of an activity or procedure (see also: instruction))

Trend (analyze) – review metrics systematically to see if useful behaviors can be deduced from the data relationships (see also: *monitor*)