Process Validation At a Glance

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How do you ensure your processes consistently make product that meet specifications?

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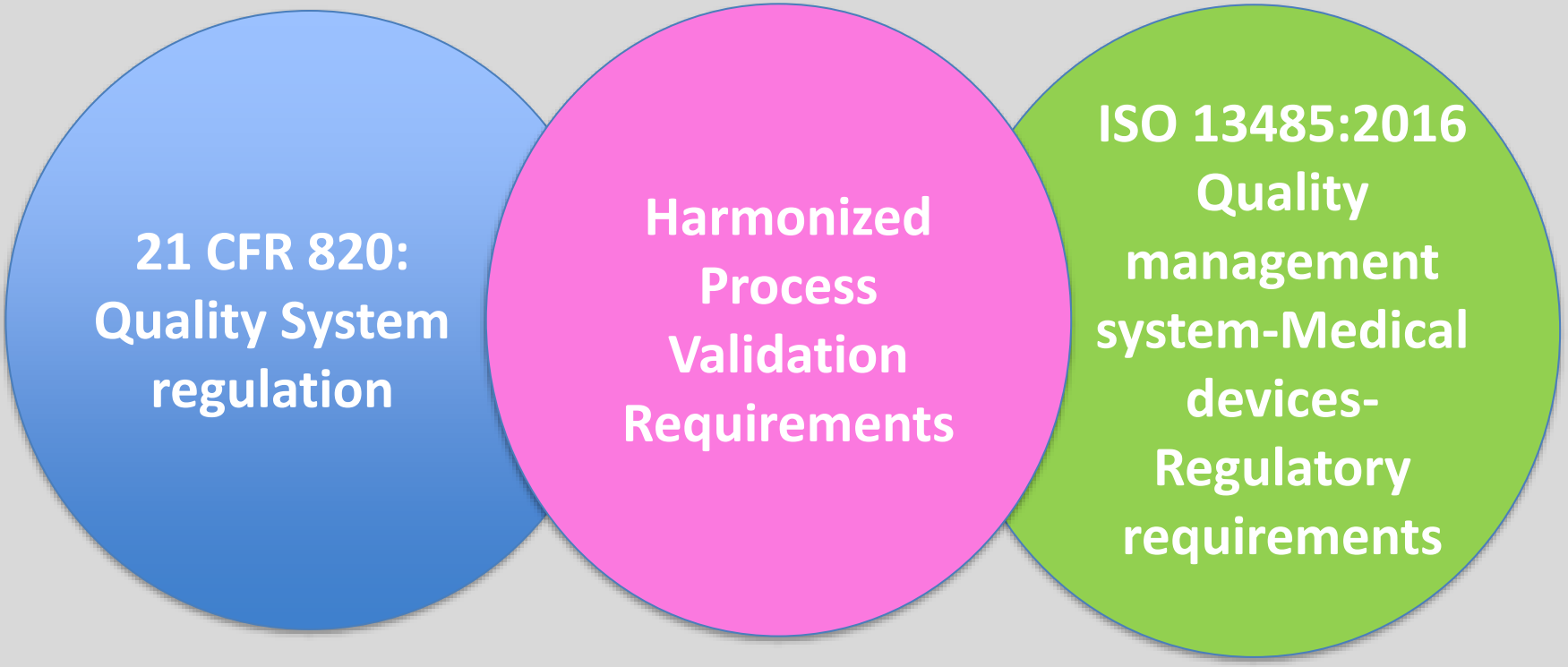
VALIDATED PROCESS

Process Validation



Learning Objectives

- Review basic Process Validation information
- State the QS regulation and ISO 13485: 2016 requirements for Process Validation
- Identify the similarities and differences in QS regulation and ISO 13485: 2016 requirements for Process Validation
- Review a Process Validation example

Process Validation

Process Validation

- Objective evidence that a process produces a result or product meeting its specifications
  - Defined in 21 CFR 820.3(z)(1)
- Part of the production and process controls subsystem of a quality system
- A series of qualifications based on established protocols
- Completed prior to finished device release

Process Validation

- Required if destructive testing is necessary to show the process produced desired result
- Required if routine end-product testing
  - Does not examine all quality attributes
  - Cannot verify the desired safety and efficacy of the finished product

Process Validation Requirements

- **Title 21 Code of Federal Regulations, Part 820: Quality System Regulation (21 CFR 820)**
  - 21 CFR 820.75 (Process Validation)
- **ANSI/AAMI/ISO 13485:2016: Medical devices-Quality management systems- Requirements for regulatory purposes (ISO 13485:2016)**
  - Clause 7.5.6 (Validation of processes for production and service provision)
  - Clause 7.5.7 (Particular requirements for validation of processes for sterilization and sterile barrier systems)

List of Processes Requiring Validation

- Sterilization
- Aseptic processing
- Injection molding
- Welding

Benefits of Process Validation

- More consistent quality and increased output
- Reduced inspection and testing
- Fewer complaints
- Less scrap/rework
- Predictable planning/scheduling
- Fewer recalls

QS regulation and ISO 13485: 2016 Process Validation Requirements

Process Validation Requirements

21 CFR 820.75

- Process shall be validated when results cannot be fully verified
- Process shall be approved according to established procedures
- The validation activities and results shall be documented
  - The date
  - Signature of individual approving validation
  - Major equipment validated

Process Validation Requirements

21 CFR 820.75

- Monitor and control process parameters for validated process
- Ensure specified requirements continue to be met
- Ensure validated processes are performed by qualified individual
- Document validated processes
  - monitor and control methods and data
  - date performed
  - individual performing the process

Process Validation Requirements

21 CFR 820.75

- When changes or process deviations occur
  - Review and evaluate the process
  - Perform revalidation where appropriate
  - Document review, evaluation, and revalidation

Process Validation Requirements

ISO 13485: 2016, Clause 7.5.6

- Process shall be validated where results cannot be verified or is not verified
- Validation demonstrate the process ability to achieve planned results
- Document procedures for validation of processes including:
  - defined criteria for review and approval of processes
  - qualification of equipment and personnel

Process Validation Requirements

ISO 13485: 2016, Clause 7.5.6

- Document procedures for validation of processes including:
  - use of specific methods, procedures and acceptance criteria
  - statistical techniques with rationale for sample sizes
  - requirements for records
  - revalidation and criteria for revalidation
  - approval of changes to the processes
- Maintain records of results, conclusions, and necessary action

Process Validation Requirements

ISO 13485: 2016, Clause 7.5.7

- Validation of sterilization and sterile barrier systems
  - Document procedures
  - Validated prior to implementation and following changes
  - Maintain records of the results, conclusions and necessary actions

Knowledge Check

What are the benefits of validating processes?

A. Fewer recalls

B. More consistent quality

C. A & B

D. More scrap/rework

Similarities and Differences of Process Validation Requirements

QS regulation and ISO 13485: 2016 Process Validation Requirements

Similarities

- Require validation of processes where results cannot be fully verified
- Require approval of process to be included in the procedure
- Require validation results and activities to be documented/maintained

QS regulation and ISO 13485: 2016 Process Validation Requirements

Similarities

- Require changes to the process to be addressed
- Require revalidation where appropriate

QS regulation and ISO 13485: 2016 Process Validation Requirements

Differences	
21 CFR 820.75	ISO 13485:2016 Clause 7.5.6
• Explicit requirements for monitoring, controlling, and documenting validated processes • Ensure specified requirements are met • Explicit requirement to have qualified operators perform validated processes	• Lists specific items that shall be contained within validation procedures

QS regulation and ISO 13485: 2016 Process Validation Requirements

Differences	
21 CFR 820.75	ISO 13485:2016 Clause 7.5.7
• Not specific requirement	• Requires procedures for the validation of sterilization and sterile barrier systems - Validated prior to use - Validated following product or process changes - Records of validation results, conclusions, and any actions

Knowledge Check

What is one example of a similar process validation requirement of the QS regulation and ISO 13485 standard?

A. List specific requirements to be included in the validation process procedures

B. Require validation of a process where results cannot be fully verified

C. A & B

Process Validation Example

Filling Process

Company A manufactures blood culture bottles

The blood culture bottles are filled with a liquid

Company A has a validation procedure in place for using this filling process

The validation procedure is in accordance with ISO 13485: 2016

Filling Process

To comply with the Quality System regulation, 820.75:

- Conduct gap analysis of validation procedure

- Revise procedures to include the following requirements:

  - The date and signature of individual approving the validation
  - To monitor, and control the filling process parameters for the validated process

Filling Process

Revise procedures to include the following requirements:

- Qualification requirements for the individual performing validation

- The monitoring and control method and data for the validated filling process

- Requirements to include the date validation was performed

Filling Process

Revise procedures to include the following requirements:

- Requirements to include the individual performing the validation or major equipment used

- Requirement to document all of the validation activities

Resources

Slide Number	Cited Resource	URL
2	Medical Devices; Current Good Manufacturing Practice (CGMP) Final Rule: Quality System Regulation *(contains Preamble)*	www.federalregister.gov/documents/1996/10/07/96-25720/medical-devices-current-good-manufacturing-practice-cgmp-final-rule-quality-system-regulation
2,5,6,8,10, 12,15,16	Quality System regulation	www.ecfr.gov/current/title-21/chapter-I/subchapter-H/part-820?toc=1
5,6,12,15,16	ISO 13485:2016, Medical devices-Quality management systems-Requirements for regulatory purposes	
	AAMI Quality Systems White Paper Comparison of 21 CFR 820 to ISO 13485:2016	www.aami.org/docs/default-source/uploadedfiles/filedownloads/whitepaper/qs-white-paper-21cfr820-13485.pdf

Resources

Slide Number	Cited Resource	URL
9,10	GHTF Quality Management System- Process Validation Guidance	www.imdrf.org/sites/default/files/docs/ghtf/final/sg3/technical-docs/ghtf-sg3-n99-10-2004-qms-process-guidance-04010.pdf
	Federal Register Notice of the Proposed Rule to the Quality System Regulation Amendment	www.federalregister.gov/documents/2022/02/23/2022-03227/medical-devices-quality-system-regulation-amendments

Summary

- Process validation establishes evidence that the process will produce desired product or results.
- There are several benefits to process validation including having fewer recalls.
- Process validation requirements of the QS regulation and ISO 13485:2016 standard are harmonized.

Questions