Building a Strong Quality Culture

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Agenda

• Changing an Organization
• Cost of (Poor) Quality
• Implementing an Effective Quality System
Traditional Role of QA / Compliance

• Often viewed by company personnel and regulators as “police”
• Monitoring daily activities and operations
• Review / approve SOP’s, protocols, validation, etc.
• Managing Quality Systems
• Performing internal / external audits
• Final reviewer of deviations & corrective action plans
• Drug product release
Organizational Change Curve

Virginia Satir Change Model
Organizational Change Curve

Virginia Satir Change Model
Expanding QA Roles & Improving Quality Culture

Require QA partnership in:

• Development of new product or process
• Design, construction and qualification phases of new facilities
• Re-design and qualification of renovated facilities
• Other large projects (e.g. installation & validation of new IT systems - SAP)
• Ensuring Quality Culture principles at contract facilities align with internal principles
What is a Quality Culture?

“Leadership, vision and values make up the foundation for a culture of quality...An organization’s culture - the way it does things, the way it “lives”- has a direct impact on how well its processes and people operate.”

Clues About Culture, Amanda Hankel, Quality Progress, August 2014
Quality Culture is Driven by Leadership

• Definition of “CGMP” amended to explicitly include management oversight of manufacturing to ensure quality

• “For purposes of paragraph (a)(2)(B), the term ‘current good manufacturing practice’ includes the implementation of oversight and controls over the manufacture of drugs to ensure quality, including managing the risk of and establishing the safety of raw materials, materials used in the manufacturing of drugs, and finished drug products.” – SEC. 711. Enhancing The Safety And Quality Of The Drug Supply. Section 501 (21 U.S.C. 351)

• “Leadership is essential to establish and maintain a company-wide commitment to quality...” – ICH Q10
Employees at All Levels can Demonstrate Leadership

Daily Decisions ...

Quality/Compliance
Path

Strong Corporate Quality Culture & Manufacturing Consistency

Choices

Unreliable Systems & Manufacturing Problems

Defects, Regulatory Actions, Business Failures

... influence your direction

Adapted from Richard Davis (2004)
The Cost of (Poor) Quality
The Cost of (Poor) Quality

• Direct Costs
  • Related to Product Failure, Scrap, etc.
• “Continual Crises” Costs
  • Unexpected costs associated with GMP non-compliance
  • Reactive versus preventive approaches
• Remediation Costs
  • Related to problem identification, correction and reporting
• Employee Costs
  • Lower productivity, distrust, morale issues, turnover/loss of talent, etc.

[Dr. Jeffrey Macher, Assoc Professor at Georgetown University]
The Cost of (Poor) Quality

• Regulatory Action Costs
  • Related to legal fees, 3rd party consultants, etc.
  • Related to recalls, discontinuation, suspended operations, etc.

• Market Share Costs
  • Related to volumes, supply availability, supply reliability, etc.

• Reputation Costs
  • Credibility, adverse publicity, loss of business, etc.

[Dr. Jeffrey Macher, Assoc Professor at Georgetown University]
The Cost of (Poor) Quality

Most Costly

$1000x$

Defect found after it's delivered to customer

External Failure Cost

Less Costly

$100x$

Defect found at company before being shipped

Internal Failure Cost

Least Costly

$1x$

No Defect! The Firm's QMS is designed, planned and organized for defect prevention and continual improvement

Prevention Cost

Source: Principles of Quality Costs, 3rd Edition, Campanella, Pg. 8
The Chiron Corporation Case

• Manufacturer of Fluvirin influenza virus vaccine expected to supplied nearly half of the U.S. supply of flu shots for the 2004-2005 season
• Numerous bulk and final product sterility failures
• Numerous bioburden failures (>50%) for intermediates
• Numerous environmental excursions with the same organism, also identified in product-related testing
• The company looked at each failure/excursion as a discrete incident rather than looking across all the data (quality metrics) and recognizing trends and relationships between the data (e.g. how environmental excursions related to bioburden failures).
• “FDA and MHRA’s review of Chiron’s investigation...led FDA to the conclusion that the sterility, and therefore safety, of the vaccine Chiron produced for the 2004-2005 influenza season could not be assured.”

— Dr. Jesse Goodman, Congressional Testimony, May 4, 2005
Impact on Public Health

• ~ 50 million doses of flu vaccine for the US 2004-2005 unavailable, leading to a severe shortage
• Who needs a flu shot?
• Impacted all persons aged 6 months and older (rare exceptions). Priority given to at-risk groups including:
  – Children aged 6-59 months
  – People aged 50 years and older
  – Pregnant women
  – Health care providers
  – Caregivers
  – Immunosuppressed patients
Further Impact of Drug Shortages

- Percent of Hospitals experiencing a drug shortage by frequency. Only 1% reported not experiencing any shortages.

- AHA survey of 820 non-federal acute care hospitals June 2011

- Added strain on the healthcare system
- Added burden on physicians and pharmacists
- Diverted resources from patient care
- Increase of adverse events and medication errors
- Delayed therapies, inadequate care, cancelled care.

- Journal of Managed Care Pharmacy, Vol 19 No 9, pp 783-789 (2013)
Implementing an Effective Pharmaceutical Quality System (PQS)
The Business Case

• **GMP is Good Business Practice**
  - PQS further aligns GMP with basic business goals of process predictability (e.g., Right First Time) & product dependability

• **Deming’s Chain reaction**
  - Reduce Variability $\rightarrow$ Improve Quality $\rightarrow$ Decrease Costs (rejected goods, etc.) $\rightarrow$ Better Products and Productivity... $\rightarrow$ More Competitive

• **Measuring Performance is Fundamental to Any Business**
  - **Actual Performance vs. Standard**: Identify process and product quality performance gaps, and promptly correct **root causes**

• **Prevention**
  - **Preventing manufacturing problems** is good business
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Virginia Satir Change Model
ICH Q10 Pharmaceutical Quality System

• **Foundation:** Regional GMP (drug product) requirements, the ICH guidance “Q7 Good Manufacturing Practice Guidance for Active Pharmaceutical Ingredients,” and ISO quality management system guidelines form the foundation for ICH Q10.

• **Harmonization:** ICH Q10 provides a harmonized model for a PQS.

• **Lifecycle:** Defines how a modern quality system assures science- and risk-based drug manufacturing and quality decisions throughout the lifecycle.
ICH Q10 Pharmaceutical Quality System

• Establish and maintain a State of Control
• Facilitate continual improvement
• Facilitate effective knowledge transfer and management
• Facilitate implementation & effective utilization of Quality by Design (Q8 Pharmaceutical Development)
• Risk Management (Q9 Pharmaceutical Risk Management)
Summary - Quality Culture

• An environment in which each and every person understands and embraces their responsibility for ensuring quality and protecting patient safety

• Quality culture drives decision-making and behaviors at all levels of the organization every day

• Without a strong quality culture, quality outcomes and delivery of quality medicines to patients cannot be assured

• “Quality means doing it right when no one is looking.” – Henry Ford
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