Complaints and Recalls

Now u can type with ur eyes

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v r going to deal with an area of very great importance

Product complaint principle

“ **All complaints & other information concerning potentially defective products must be carefully reviewed according to written procedures”**

Do not place the patient at risk because of inadequate safety, quality or efficacy

Objectives

- **To identify the key issues in product complaint and recall handling**
- **To understand the specific requirements for organisation, procedures & resources.**
- **To understand & develop actions to resolve current issues applicable to u**

Complaints as a tool for overall quality improvement

Complaints Handling Principle

- **Handle Positively & carefully review**
- **Must be seen as important work**
- **Managed by a senior staff member**
- **Thorough investigation of the cause is essential**
- **A major source of information & learning**

The result of investigation r used to improve the situation and prevent recalls & complaints in the future

Complaints Procedure - I

- Designated responsible person
- Written procedure describing action to be taken
- Acknowledge and respond to complainant within a reasonable period
- Record written and verbal comments

Responsible Person

- **May be authorized person**
- **If not, must advise authorized person of results**
- **Sufficient support staff**
- **Access to records**

Decision from a Complaint Investigation

Complaint justified

- Actions to prevent reoccurrence
- Ongoing observation of process
- Recall product may be required

Complaint not justified

- Advise customer of findings
- Appropriate marketing response

For example, when the product has expired for a long time or the product was not kept at the storage conditions stated by the manufacturers.

Other issues

- **Regular review of trends required**
  - **Reoccurring problems**
  - **Potential recall or withdrawal**

- **Inform competent authority of serious quality problems**

Classification of Defects

- **If complaint is justified, then there has been a failure of the quality system**
- **Once defect has been identified, company should be dealing with it in an appropriate way, even recall.**
- **The definition of defects is useful.**

- **The following system has been found in some countries (but it is not a WHO guideline):**
  - **Critical defects**
  - **Major defects**
  - **Other defects**

Critical Defects

Those defects which can be life threatening and require the company to take immediate action by all reasonable means, whether in or out of business hours

Examples

- **Product labelled with incorrect name or incorrect strength**
- **Counterfeit or deliberately tampered-with product**
- **Microbiological contamination of a sterile product**

Other Defects

Those defects which present only a minor risk to the patient — batch recall or product withdrawal would normally be initiated within a few days

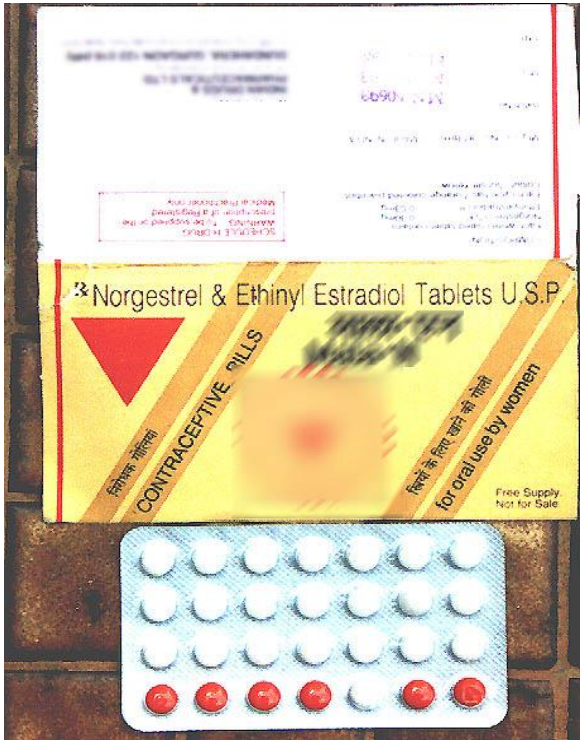
Examples

- **Readily visible isolated packaging/closure faults**
- **Contamination which may cause spoilage or dirt and where there is minimal risk to the patient**

Reasons for Recall

- Customer complaint
- Detection of GMP failure after release
- Result from the ongoing stability testing
- Request by the national authorities
- Result of an inspection
- Known counterfeiting or tampering

Detection of GMP failure



Product Recall Principle

“There should be a system to recall from the market promptly and effectively, products known or suspected to be defective.”

Definition

Recall

- Removal from the market of specified batches of a product
- May refer to one batch or all batches of product

Responsible person

SOP for Recall

- Established, authorized
- Actions to be taken
- Regularly checked and updated
- Capable of rapid operation to hospital and pharmacy level
- Communication concept to national authorities and internationally

Distribution Records

- Available to designated person for recall purposes
- Accurate
- Include information on:
  - Wholesalers
  - Direct customers
  - Batch numbers
  - Quantities

Collect 3 examples of complaints or recalls from your experience

Thank you

QUALITY AUDIT

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AUDITING IN THE PHARMACEUTICAL INDUSTRY

Medicinal products have to be of high quality

People’s lives depend on it. While end product testing of samples from each batch (to ensure compliance with a release specification) is important, it is not enough to ensure quality, which must be built into the manufacturing processes.

To ensure quality, all pharmaceutical manufactures are required to establish and implement an effective pharmaceutical QA system, involving the active participation of the management and personnel of different services involved.

To assess the effectiveness of this QA system and ensure that it follows good manufacturing practice (GMP), regular audits must be performed. Audits may be performed by the manufacturer on itself (internal), or on its vendors (external). Alternatively, audits may be conducted on a manufacturer by its customers or by a regulatory body (regulatory).

INTERNAL AUDITS

Internal audits are carried out by an organization on its own systems, procedures and facilities. European legislation requires the Pharmaceutical manufactures: ‘conduct repeated self-inspections as part of the QA system, to monitor the implementation and respect of good manufacturing practice and to propose any necessary corrective measures. Records of such self-inspections and any subsequent corrective action shall be maintained’.

Aside from the legal requirement, internal audits are vital from a business perspective. As well as monitoring the current compliance status, well-conducted internal audits help to spread the message that quality is everybody’s responsibility and to catalyse continuous improvement.

The Organisation of internal audits depends on the size and complexity of the organization. A procedure and programme of internal audits should be available and may be requested during regulatory audits. Responsibility for the management of internal audits should be assigned to ensure that they occur and are effectively followed up (always a challenge). One possible system is a three tier approach.

Tier one - audits carried out by the staff of a section or department on themselves. Such audits will typically be short and limited in scope, focusing on ‘visibles’, such as housekeeping and documentation.

Tier two - audits typically led by a local QA group, comprising staff independent of the department under audit. Such audits will typically be longer, but less frequent and are likely to focus more on systems than housekeeping.

Tier three - audits carried out by a corporate compliance group. Alternatively, external consultants may be used. Such audits are often carried out to assess readiness for a regulatory audit, but may also be used to obtain an expert view on a specific critical activity.

For tier one audits, are usually selected on the basis of knowledge and experience of the area to be audited, though they should also receive some basic training on the reasons for audits and particular areas for examination. More extensive audit training will be required for tier two auditors, with more detail on quality systems and audit techniques. Tier three auditors are likely to be highly trained and experienced specialists, with an expert knowledge of GMP and other regulatory requirements for pharmaceuticals.

EXTERNAL AUDITS

External audits are audits carried out by a company on its vendors or subcontractors. There is no legal requirement to conduct such audits, but the need is implicit, since manufacturers are required to have a thorough knowledge of their suppliers. Furthermore, if work is contracted out, they must ensure that contractors are complement to complete it, in accordance with GMP.

There are also strong business benefits to be derived from performing these audits:

- Building knowledge and confidence in the partnership arrangement.
- Ensuring that requirements are understood and met.
- Enabling reduction of certain activities (e.g. in-house qc testing of starting materials).
- Reducing the risk of failure (and, by implication, its costs).

The scope of these audits will vary, depending on the relationship between the two parties, which may range from a simple vendor-purchaser transaction to a strategic joint venture partnership. Confidentiality and technical agreements are likely to influence this.

Typically, there will be an initial evaluation audit of the capabilities and general suitability of the vendor / contractor. Subsequently, regular audits will be carried out to assess compliance with agreed contractual standards, the frequency of which will depend on the initial findings and the critically of the vendor and materials supplied. As confidence in the vendor increases through auditing, confidence in the vendor's own internal auditing systems, third-party audits and vendor history – it should be possible to reduce the level of external auditing.

External auditors typically have a broad practical experience of GMP and receive quality systems auditing training equivalent to that of ISO 9001 lead auditors. Audit teams may also include specific technical experts. Depending on the size of the facility and the scope of the audit, an audit team of one or two other people will usually accompany the audit leader.

Many Pharmaceutical industry suppliers are ISO 9001 or ISO 9002 – certified and are regularly audited by their certification body. IQA's Pharmaceutical Quality Group has published codes of practice for Pharmaceutical suppliers, under the banner 'PS 9000', detailed the additional requirements for the Pharmaceutical industry, concerning the manufacture of product contact packaging materials, printed materials and raw materials (active ingredients and excipients). Pharmaceutical contract manufacturing or packaging companies will need to be licensed and will be subject to regulatory audits.

Regulatory Audits

These audits are carried out by regulatory bodies against relevant regulations for the manufacture and supply of Pharmaceutical products. National regulatory bodies, such as the Medicines Control Agency (MCA) in the UK and Food and Drug Administration (FDA) in the USA, are statutorily responsible for carrying out such audits. All licensed Pharmaceutical manufactures periodically receive them (as may their contractors). These audits may be unannounced (MCA currently performs about ten percent of its UK inspections like this) as manufacturers are expected to be complying with GMP at all times. Regulatory bodies from other countries in which products are sold may also audit companies (i.e. FDA audits European manufactures).

Regulatory inspectors are extensively trained and are knowledgeable and professional. All MCA medicines inspectors are relevantly qualified and have a minimum of five years appropriate experience in a manufacturing operation. They will be on the registers of persons eligible to act as qualified persons (QP) and lead auditors.

Failure to pass a regulatory audit can lead practical experience of GMP and receive to restrictions on (or the withdrawal of) a manufacturing or import / export license. (FDA has recently imposed punitive financial ‘consent decrees’ on companies which failed to respond adequately to audit findings and comply with GMP). Therefore, it is vital that companies have defined processes for handling audits and that staff are well trained as auditors. Internal audits can provide valuable practice opportunities.

Currently, different regulatory bodies have distinct audit styles and requirements, but to reduce costs and the audit burden on manufacturers, there have been moves towards sharing and mutually recognizing audit findings between these bodies, a practice likely to increase in the future.

There has been a Pharmaceutical Inspection Convention (PIC) since 1971. Based in Geneva, PIC is open to any member of the UN that satisfies PIC officials of its adequate legislation and inspections relating to medicinal products. Under PIC, the health opportunities of member countries agree that, if the manufacturer consents, information obtained during inspections may be exchanged. PIC holds regular meetings for the representatives of member countries to discuss common standards.

Launched in November 1995, the Pharmaceutical inspection co-operation scheme is an informal, flexible arrangement between the inspectorates of PIC contracting states, which is run in parallel with PIC and is open to inspectorates from other countries.

The scheme retains and improves on the convention's main features:

- Networking and confidence –building between national inspection authorities
- Development of quality systems
- Training of inspectors and related experts
- Work towards global harmonization of GMP

Regulatory audits vary considerably in scope, frequently and duration. Audits by the national regulatory body are likely to be regular and to cover systematically all areas of a facility, over a period. There may be additional audits (or Visits) as a result of specific events, which may be company – specific (for example the recall of a product) or industry – wide (a recent example being checks on compliance with transmissible spongiform encephalopathies regulations by the MCA).

Audits by the regulatory body of another country may be general, or linked to a specific regulatory event: the Pre-approval inspections of the FDA are linked to submission of a new drug application. Depending on the scope, up to three, inspectors may visit, for a period of between half a day to two weeks.

After a regulatory audit, a formal report will be delivered , the format of which will depend on the regulatory body concerned. MCA provides verbal feedback at the exit meeting, then a brief, action-oriented, written report shortly afterwards, FDA provides a ‘form 483’ at the exit meeting, if there are points of concern, followed by a more detailed establishment inspection report. The regulatory body will expect a timely, formal response to the audit report and typically, will check that corrective action has taken place, as part of the next audit, it is wise business practice to take regulatory audit findings seriously and ensure that timely and effective corrective action is taken.

Thank You

HANDLING OF RETURNED PRODUCTS

Drugs are an important component of Health Care System

Definition of Finished Product:

A Product that has undergone all stages of Production, including Packaging in its final container and Labeling.

Returned Good / Product.

The Finished Product sent back to the manufacturer

Disposal of Finished Product from Factory Premises

Storage at Depots

Sales and Distribution

A Returned Drug Product is the Distributed F.P. that has been returned to the manufacturing following reasons,

COMPLAINT

DAMAGE

EXPIRATION OF VALIDITY.

A Salvaged drug product is that product which has been subjected to improper storage conditions like extremes of Temperature, Humidity, Smoke, fumes, radiation, fire accidents or equipment failure but may be reprocessed or recovered after laboratory validation to meet the approved specification laid down for that product.

CLASSIFICATION OF RETURNED DRUG PRODUCTS

- Drug products that still comply with all acceptable standards according to investigation by quality control department.
- Drug products which can be reprocessed to comply with appropriate specifications.
- Drug products which are Un-acceptable.

DISPOSITION OF RETURNED DRUG PRODUCTS

- returned drug products shall be counter checked at the Security and informs the concerned department –i.e. Warehouse
- Receiving bay then records amount and identification of returned drug products
- Returned drug products are handed over to In – charge ware house
- Returned drug products shall be kept in QUARANTINE area
- Q.A. shall come for Physical Verification
- Holds in place until further decision

To be **RECOVERED** – QA & Validation dept. for reprocessing

To be **DESTROYED** – Destruction shall be done in the presence of QA officer and Excise Official

Destruction shall be done in such a way that No Pollution hazards shall be caused and prior approval from ETP (Effluent Treatment Plant) and Biomedical Waste Dept.

Records of Returned Drug Product & Destruction Details:

A. Name of Product
B. Batch No.
C. Label Claim
D. Dosage Form
E. Qty & Date Of Receipt
F. Origin of returned goods
G. Storage conditions
H. Transportation

A Destruction Certificate shall be signed and commented by warehouse person and QA person.

This certificate should be a part of the batch document.

QUALITY REVIEW

The prime motto of any Pharmaceutical industry, as a vital segment of health care system, should be of producing a product of good quality in terms of safety, purity and efficacy.

NECESSITY FOR QUALITY PRODUCT

As all the countries are marching towards globalization. This globalization in turn forces the companies to produce a product which meets the quality specifications set by the respective countries, and because of increasing complexity of modern Pharmaceutical manufacturing arising from a wide variety of unique drugs and dosage forms. The Pharmaceutical company has set a department called quality assurance (QAD) in order to install the quality aspects in each and every product.

It is the responsibility of the QAD to install all the quality aspects of a product in each and every product with the help of the other departments like production, quality control dept, stores and maintenance. It does it duty by reviewing various steps involved in manufacturing of products.

QUALITY REVIEW

Quality means purity, safety and efficacy, whereas review means counter checking.

As a whole, quality review in a Pharmaceutical company, represents counter checking each and every step starting from acquiring raw material to releasing finished products, including market complaints.

QUALITY REVIEW TEAM

A systematic and effective review team includes knowledgeable, professional and experienced persons from each and every department. A typical QR team includes:

Quality assurance -1 person

Production -1 person

Quality control-1 person

Regulatory affairs -1 person

Supply chain management -1 person

Team leader – Generally president or vice president (tech)

OBJECTIVES OF QRT

To minimize the errors those arise during various stages involved in production and to minimize the market complaints and mainly to install safety, purity and efficacy in each and every product.

RESPONSIBILITIES OF QRT

In the way to achieve the objectives, QRT will take various variables into consideration for reviewing, which includes

A. **Raw material review**
B. **Production records review**
C. **Packaging and Labelling review**
D. **Finished product record review**

A. RAW MATERIAL CONTROL REVIEW

Quality review team will take decisions for the approval of quality of raw material from a vendor by auditing the manufacturing premises of vendor and documenting the auditing reports and then the reports will be sent to QRT leader for final approval of vendor to supply the raw material.

B. PRODUCTION RECORD REVIEW

B1. Dispensing: In dispensing, each and everything has to be documented like r/m name, batch no., quantity, A.R.N., approval signature.

B2. In process checks: The number of units assayed at the end of the process is not likely to be representative of more than a small portion of the actual portion and so as to minimize batch to batch and within batch variation, it is important to ensure that finished products have uniform purity and quality within batch and between the batches.

This is accomplished by identifying critical steps involved in manufacturing process like checking parameters of tablets (hardness, weight , thickness , friability , DT) and pH adjustments in case of parenterals.

Each and every thing in process checks has to be documented for further reviewing.

C. PACKAGING AND LABELING RECORD REVIEW

After manufacturing a product, QA member will check that correct labels have been used for correct products and see that no mix-ups had occurred, and the approved labels should be attached to the BMRs.

D.FINISHED PRODUCT RECORD REVIEWS

Final testing of f/p is done in Quality control dept. The finished product is tested for compliance with predetermined standards prior to release of product for packaging and subsequent distribution. All the tests and results should be documented. QRT will review the documents before approving for market release.

This finished product testing along with in process checking assures that each and every unit contains the amount of drug claimed on the label, that the entire drug in each unit is available for absorption, that the drug is stable in the formulation in its specific final container, and that dosage units themselves contain no toxic foreign substances.

FREQUENCY OF QUALITY REVIEW

It varies from company to company starting from once in a month to quarterly reviewing, in some instances emergency reviewing.

COMPLIANCE TO Q.R.

Compliance with respect to quality review department can be achieved only by following standard operational procedures by concerned officials of respective departments. I.e. they should document each and everything they do and do as per given in SOP.

RESPONSIBILITY OF QUALITY REVIEW DOCUMENTS

Quality assurance dept will take the responsibility of all the quality documents concerning quality aspects of products

INTRODUCTION TO VALIDATION

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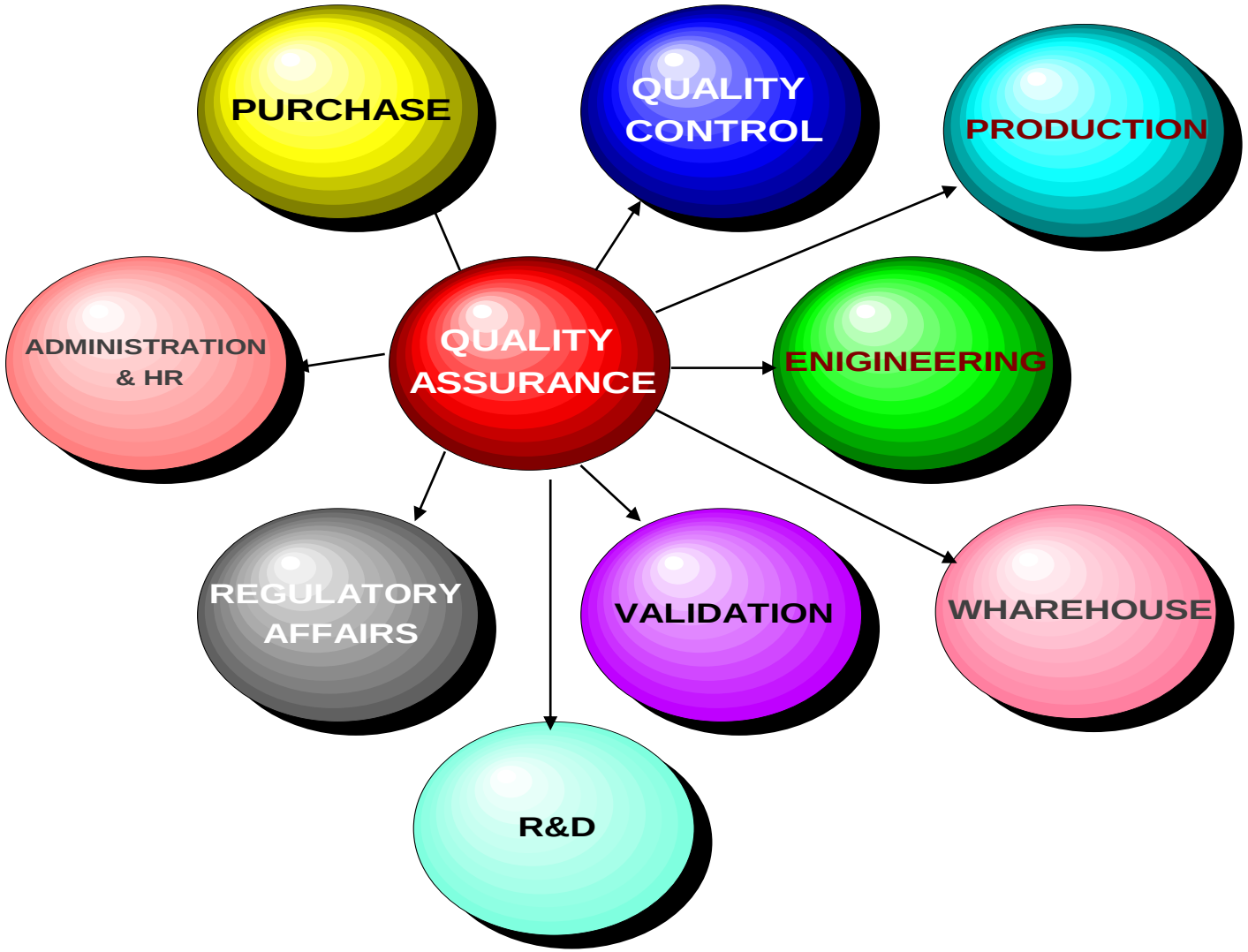
PURCHASE
QUALITY CONTROL
PRODUCTION
ADMINISTRATION & HR
QUALITY ASSURANCE
ENIGINEERING
REGULATORY AFFAIRS
VALIDATION
WHAREHOUSE
R&D

WHY VALIDATION?

The pharmaceutical industry uses expensive materials, sophisticated facilities & equipment's and highly qualified personal.

The efficient use of these resources is necessary for the continued success of the industry. The cost of product failures, rejects, reworks, recalls, complaints are the significant part of the total production cost.

Detailed study and control of the manufacturing process – validation is necessary if failure cost is to be reduced and productivity improved.

V ery

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E verything

Def.

"Establishing Documented Evidence, which provides a high degree of assurance that a specific process will consistently produce a product meeting its pre-determined specification and quality attributes".

USFDA

There are different approaches for validating a pharmaceutical industry

- Prospective validation
- Retrospective validation
- Concurrent validation
- Revalidation

Prospective Validation

- pre-planned protocol.
- This approach to validation is normally undertaken whenever a new formula, process or facility must be validated before routine pharmaceutical formulation commences

Retrospective validation

- what it purports to do on review and analysis of historical information (Process control)

Concurrent validation

- process monitoring of critical processing steps and product testing

Revalidation

- This is carried out when there is any change or replacement in formulation, equipment plant or site location, batch size and in the case of sequential batches

Various types of validations :

- Equipment/Instrument validation :
  - **DQ**
  - **IQ**
  - **OQ**
  - **PQ**
- Area Qualification
- Analytical Method validation
- Cleaning validation
- Process Validation

IQ - Verification that the equipment/system is installed in a proper manner and that all of the devices are placed in an environment suitable for their intended operations.

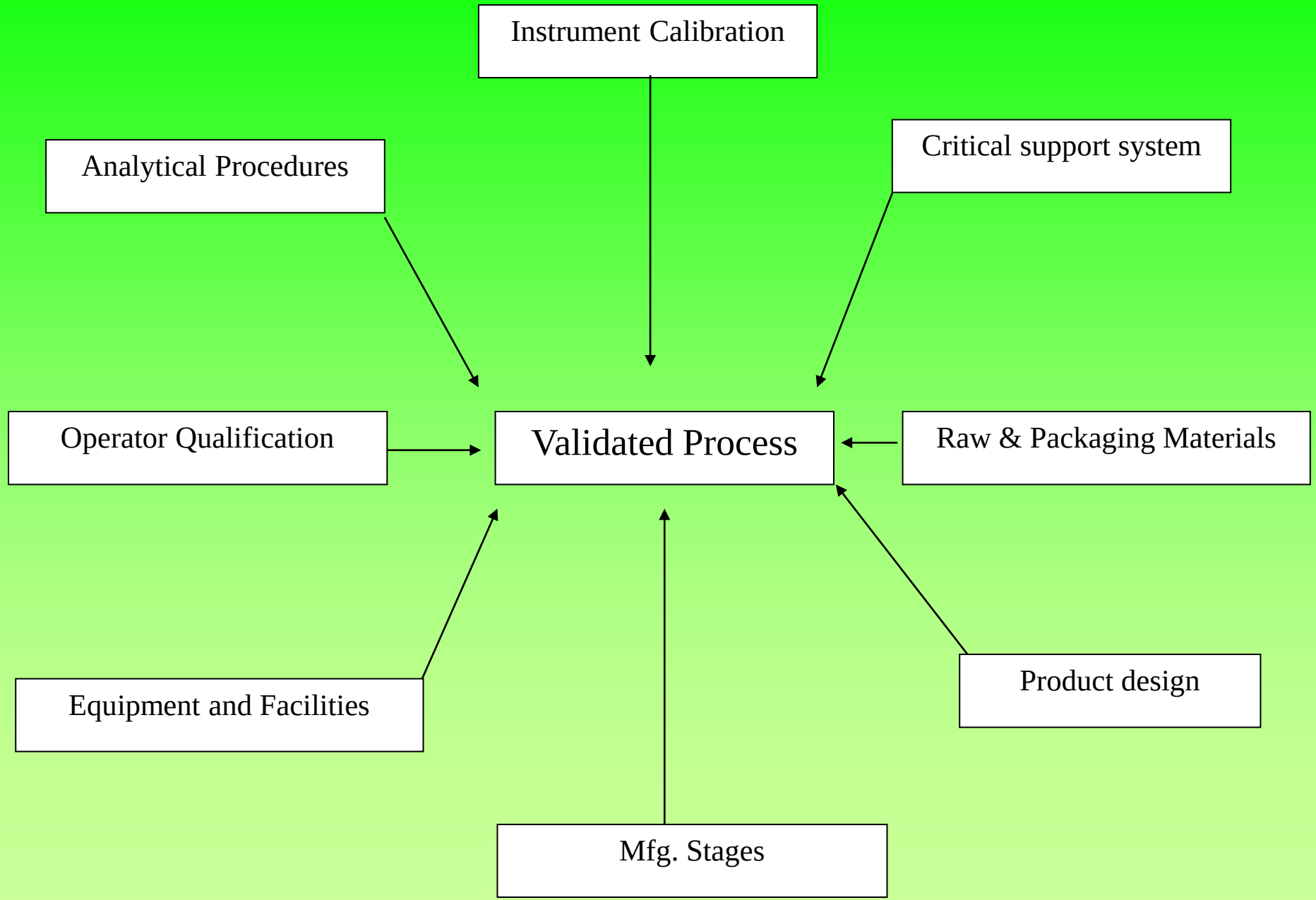
OQ - Verification that the equipment performs as expected throughout the intended range of use.

PQ - Verification that the system is repeatable and consistently producing a quality product.

DQ - Document verification of the design f equipment and manufacturing facilities.

Elements of Validation:

The validation of a process requires the qualification of each of the important elements of the process. The relative importance of an element may vary from process to process. Some of the elements commonly considered in a process validation study are presented below


Instrument Calibration
Analytical Procedures
Critical support system
Operator Qualification
Validated Process
Raw & Packaging Materials
Equipment and Facilities
Product design
Mfg. Stages

Thank U

Analytical Method Validation

by using HPLC

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For method validation the FDA designated the specifications and is listed in USP and can be referred to as the "Eight steps of method validation“.

These terms are referred to as "Analytical performance parameters", or sometimes as "analytical figures of merit“

International Conference on Harmonization (ICH) divides the "validation characteristic" somewhat differently, as outlined in the table.

SL. No.	USP PARAMETERS	ICH PARAMETERS
1	Accuracy	Accuracy
2	Precision	Precision
3	Limit of Detection	Limit of Detection
4	Limit of Quantitation	Limit of Quantitation
5	Specificity	Specificity
6	Linearity & Range	Linearity
7	Ruggedness	Range
8	Robustness	Robustness
9	-	System Suitability

The difference in the USP and ICH terminology is for the most part 1, however, with one notable exception that is ICH treats systems suitability as a part of method validation, where as the USP treats in it in a separate chapter (<621>).

Discussions of definition of analytical performance parameter are given below

Accuracy

It is a measure of exactness of an analytical method, or the closeness of agreement between the value that is accepted as either a conventional, true value or an accepted reference value and the value found.

Recovery percentage

About 25 mg of drug WRS, was weighed accurately, into a 50 ml volumetric flask, was dissolved in mobile phase and diluted to volume with the mobile phase (Stock solution).

1.0 ml of stock solution was transferred to 4 different 50 ml volumetric flasks and 0.0, 0.2, 0.4, and 0.6 ml of stock solution was added and the volume was made up with the mobile phase and mixed.

Separately each solution was injected and the percentage recovery of drug was calculated by recorded chromatogram.

Precision

It is the measure of the degree of repeatability of an analytical method under normal operation and is normally expressed as the percent relative standard deviation for a statistically significant number of samples.

According to the ICH, precision should be performed at 3 different levels: repeatability, intermediate precision and reproducibility.

Repeatability is the results of the method operating over a short time interval under the same condition (inter-assay precision).

Intermediate precision is the result from within lab variations due to random events such as different day's analysts, equipment, etc

Reproducibility refers to the results of collaborative studies of the laboratories

Procedure

About 25 mg of drug WRS, was accurately Weighed, into a 50 ml volumetric flask, dissolved and diluted to volume with the mobile phase. 1.0 ml of this solution was diluted to 50 ml with the mobile phase and mixed (10 ppm).

Separately equal volume (about 20 µl) of above solution was injected six times and recorded the chromatogram.

Specificity

Specificity is the ability to measure accurately and specifically the analyte of interest in the presence of other components that may be expected to be present in the sample matrix.

It is a measure of the degree of interference from such things as other active ingredients, excipients, impurities, and degradation products, ensuring that a peak response is due to a single component into two separate categories: identification, and assay / impurity tests.

Procedure

System suitability solution:

About 25 mg of drug (Terbutaline Sulphate) WRS and 7 mg of 3,5- dihydroxy-w-t-butyl amino acetophenone hydrochloride was weighed into a 50 ml volumetric flask, dissolved and diluted to volume with the mobile phase.

LOD

The limit of detection (LOD) is defined, as the lowest concentration of an analyte in a sample that can be detected, not quantitated.

It is a limit test that specifies whether an analyte is above or below a certain value.

It is expressed as a concentration at specified signals - to - noise (S/N) ratio, usually two - or three - to - one.

The ICH has recognized the signal to - noise (S/N) ratio convention, but also lists two other options to determine LOD: Visual non-instrumental methods and a means of calculating the LOD.

Procedure

About 25 mg of drug WRS, was accurately weighed, into a 50 ml volumetric flask, dissolved and diluted to volume with the mobile phase. 1.0 ml of this solution was diluted to 50 ml with the mobile phase and mixed. 1.0 ml of this solution was diluted to 100 ml with the mobile phase and mixed (0.1 ppm).

Equal volume (about 20 μL) of above solution and mobile phase (Blank) was separately injected and recorded the chromatogram.

LOQ

The limit of quantitation (LOQ) is defined as the lowest concentration of an analyte in a sample that can be determined with acceptable precision and accuracy under the stated operations of the method.

The ICH has recognized the 10 - to - 1 signal - to - noise ratio as typical, and also, like LOD, lists the same two additional options that can be used to determined LOQ, visual non - instrumental methods and a means of calculating the LOQ.

PROCEDURE

About 25 mg of drug WRS, was accurately Weighed, into a 50 ml volumetric flask, dissolved and diluted to volume with the mobile phase. 1.0 ml of this solution was diluted to 50 ml with the mobile phase and mixed. 5.0 ml of this solution was diluted to 100 ml with the mobile phase and mixed (0.5 ppm).

Equal volume (about 20 µL) of above solution and mobile phase (Blank) was separately injected and recorded the chromatogram

Linearity & Range

Linearity is the ability of the method to elicit test results that are directly proportional to analyte concentration with in a given range.

Linearity is generally reported as the variance of the slopes of the regression line.

Range is the interval between the upper and the lower levels of analyte that have been demonstrated to be determined with precision, accuracy and linearity using the method as written

Procedure

About 25 mg of Drug WRS, was accurately weighed, into a 50 ml volumetric flask, dissolved and diluted to volume with the mobile phase (Stock solution).

0.4, 0.6, 0.8, 1.0, 1.2 and 1.4 ml of above stock solution was transferred to separate six 50 ml of volumetric flasks and diluted with mobile phase to volume and mixed, so the resulting solutions contained 4, 6, 8, 10, 12 and 14 ppm of Drug respectively.

Equal volume (about 20 μL) of each solution was injected separately and recorded the chromatogram.

Ruggedness

This is a degree of reproducibility of the results obtained under a variety of conditions, expressed as % Relative Standard Deviation (RSD).

This condition includes different laboratories, analyst, instruments, reagents, days etc.

ICH did not address ruggedness specifically instead, it covered the topic of ruggedness as part of precision

Procedure

Different analysts carried out the performance of the method, on different days and on different instruments.

Robustness

It is a capacity of a method to remain unaffected by small deliberate variations in method parameters.

Robustness of a method is evaluated by varying method parameters such as percent organic, pH, ionic strength, temperature, etc., and determining the effect (if any) on the results of the method..

As in ICH guidelines, robustness should be considered early in the development of a method.

In addition, if the results of a method or other measurements are susceptible to variation in method parameters, these parameters should be adequately controlled and a precautionary statement included in the method documentation

System Suitability

According to the USP, system suitability tests are an integral part of chromatographic methods.

These tests are used to verify that the resolution and reproducibility of the system are adequate for the analysis to be performed.

System suitability tests are based on the concept that the equipment, electronics, analytical operations, and samples constitute an integral system that can be evaluated as a whole.

System suitability is the checking of a system to ensure system performance before or during the analysis of unknowns.

Parameters such as Plate count, Tailing factors, Resolution and Reproducibility are determined and compared against the specifications set for the method.

These parameters are measured during the analysis of a system suitability, "Sample" that is a mixture of main components and expected by-products.

USP chapter 1225 on validation of analytical methods specifically address terms and definitions, but leaves protocol and methodology open for interpretation

Conclusion

A well-defined and documented validation process provides regulatory agencies with evidence that system and method is suitable for its intended use.

By approaching method development, optimization and validation is logical, stepwise fashion, laboratory resources can be used in a more efficient and productive manner

Thank U