

Speakers



Dr Steffen Groß
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ICH Q8 Training Course

From QbD to Process Validation



Live Online Training on 28/29 April 2026



Development, Process Validation, Lifecycle Approach,
Control Strategy / PAT / RTRT

Highlights

- Quality by Design (QbD)
- Quality Target Product Profile (QTPP)
- Critical Quality Attributes (CQA) and Critical Process Parameters (CPP)
- Design Space (DS) and DoE Examples
- Process Analytical Technology (PAT)/RTRT

Programme

Objectives

You will be updated on the latest regulatory developments and learn how to apply the respective paradigms in Pharmaceutical Development to be better able to design strategies for the implementation of Quality by Design (QbD) according to ICH Q8.

During this Live Online Training elements and methodologies associated with ICH Q8 will be discussed. All this will be illustrated with examples and case studies.

Background

The impact of ICH Q8, Q9, Q10, and Q11 is changing both the regulatory expectations and the strategies of Pharmaceutical Development. This impact will continue to grow, especially in view of the ICH Q12 Guideline.

The QbD concept described in ICH Q8 and ICH Q11 have to be seen as an overarching paradigm and an interdisciplinary approach across the product lifecycle. It also systematically emphasises enhanced product and process understanding throughout the product lifecycle.

Ideally, application of ICH Q8 and ICH Q11 elements already starts in the early design phase of a drug product where both patients' needs and process design are considered. The QbD concept requires a comprehensive understanding of the chemical and physical nature of the individual active substance(s) and excipients, and of the way their attributes interact in the formulation and how they are impacted by the manufacturing process. During the design phase, it is important to establish the Quality Target Product Profile (QTPP), determine the Critical Quality Attributes (CQAs), identify Critical Process Parameters (CPPs) and Material Attributes (material CQAs) and to understand how the process parameters and material attributes affect the CQAs. The relationship between process inputs (material attributes and process parameters) and the CQAs is described in the Design Space and ensured during manufacturing with an enhanced control strategy, leading to improved process understanding, greater operational flexibility and opportunities for more efficient life cycle management activities.

ICH Q8 combined with ICH Q12 will open the door to a powerful era of refined, modern and efficient pharmaceutical development and optimization for those companies who are ready to invest in this new paradigm.

Target Audience

This Live Online Training addresses scientists, engineers, managers and executives from Pharmaceutical and Biotech Development units and support functions to Manufacturing, including Quality Assurance and Technical/CMC Regulatory Affairs, who are involved in the implementation of ICH Q8 elements.

Programme Day 1

Introduction to QbD – Setting the Scene

- Drug product development at a glance – from first in man to marketing authorization
- Pharmaceutical QbD: Quo vadis?
- Application of QbD principles to drug product development

QbD - Regulatory Perspective

- Current state of PAT & QbD implementation and regulatory challenges
- Quality by on-line (PAT) measurements
- Real time release testing: general considerations
- Going forward: ICH Q12 / Q13 / Q14

Quality Risk Management and Control Strategy

- Objectives of Quality Risk Assessment (QRA) as part of development
- Overview on risk assessment tools
- Introduction to Process Risk Map
- Introduction of risk-based control strategy development

Q&A Session 1



Case Study DoE

- Why we use DoE in the pharmaceutical development
- Example: DoE for formulation selection / optimization
- Example: DoE for manufacturing process optimization
- DoE vs "traditional" approach – when to use which

QbD Toolbox: DoE, PAT, Basic Statistics

- Value-added use of QbD tools – generic approaches and tailored solutions
- Examples for different unit operations and variable problems

Q&A Session 2

Programme Day 2

Reports and Documentation

- Development reports
- Transfer protocols and reports
- Control strategy and link to the submission dossier

How the QbD derived Control Strategy defines Process Validation

- QbD and PAT as an enabler for gaining Process Understanding and designing the process and the control strategy, PV stage 1 (establishing the control strategy)
- Different approaches to PV/PPQ depending on the type of control strategy, PV stage 2 (traditional, continuous process verification or hybrid approach used to verify the control strategy)
- Ongoing/Continued Process verification, PV stage 3 (verifying the validity and robustness of the control strategy)

Process Validation - Case Study (Small Molecule Drug Product)

Case study related to the previous presentation (PV stage 1 and 2)

- Case example of a solid dosage form process enabled by a QbD approach
- Establishing the control strategy: Examples of the application of PAT/RTRT
- Validation of the process – verification of the control strategy

Ongoing Process Verification and Lifecycle Approach of a Process established from QbD Principles

- Continuous process verification versus continued/ongoing process verification (PV stage 3)
- Case study – the continuation of the example from above (PV stage 3)
- ICH Q12, performance-based control and the link to PAT
- Life cycle management of the product, process and control strategy opportunities for a product developed using of a QbD principles

Q&A Session 3

Speakers



Dr Steffen Groß, Paul-Ehrlich-Institut (PEI)
Federal Institute for Vaccines and Biomedicines, Germany

Steffen is Head Section Quality Evaluation of Antibody Therapeutics at the Paul-Ehrlich Institute (PEI).



Dr Line Lundsberg-Nielsen, NNE, Denmark

Before being a consultant Line has worked at Novo Nordisk and Lundbeck where she had many years of experience with QbD, PAT and RTR.



Dr Martin Maus, Boehringer Ingelheim Pharma GmbH, Germany

Martin is a Principal Scientist at Boehringer Ingelheim in Biberach where he is working in late stage product development of solid oral dosage forms.



Dr Christian Palmes, Bayer AG, Germany

Christian is CMC Principal Statistician in the Department of Digital Transformation in CPD, Pharmaceuticals, at Bayer.



Dr Andrea Staab, Boehringer Ingelheim Pharma GmbH, Germany

Andrea is Head of Drug Product Development Strategies & External Projects at Boehringer Ingelheim in Biberach.

Participant's comment from a previous ICH Q8 Training Course:

"Excellent speakers!"

Gordana Savi, Croatian Agency for Medicinal Products and Medical Devices



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