Producing a GMP-certified product

The process at Vecura; an example of ATMP manufacturing

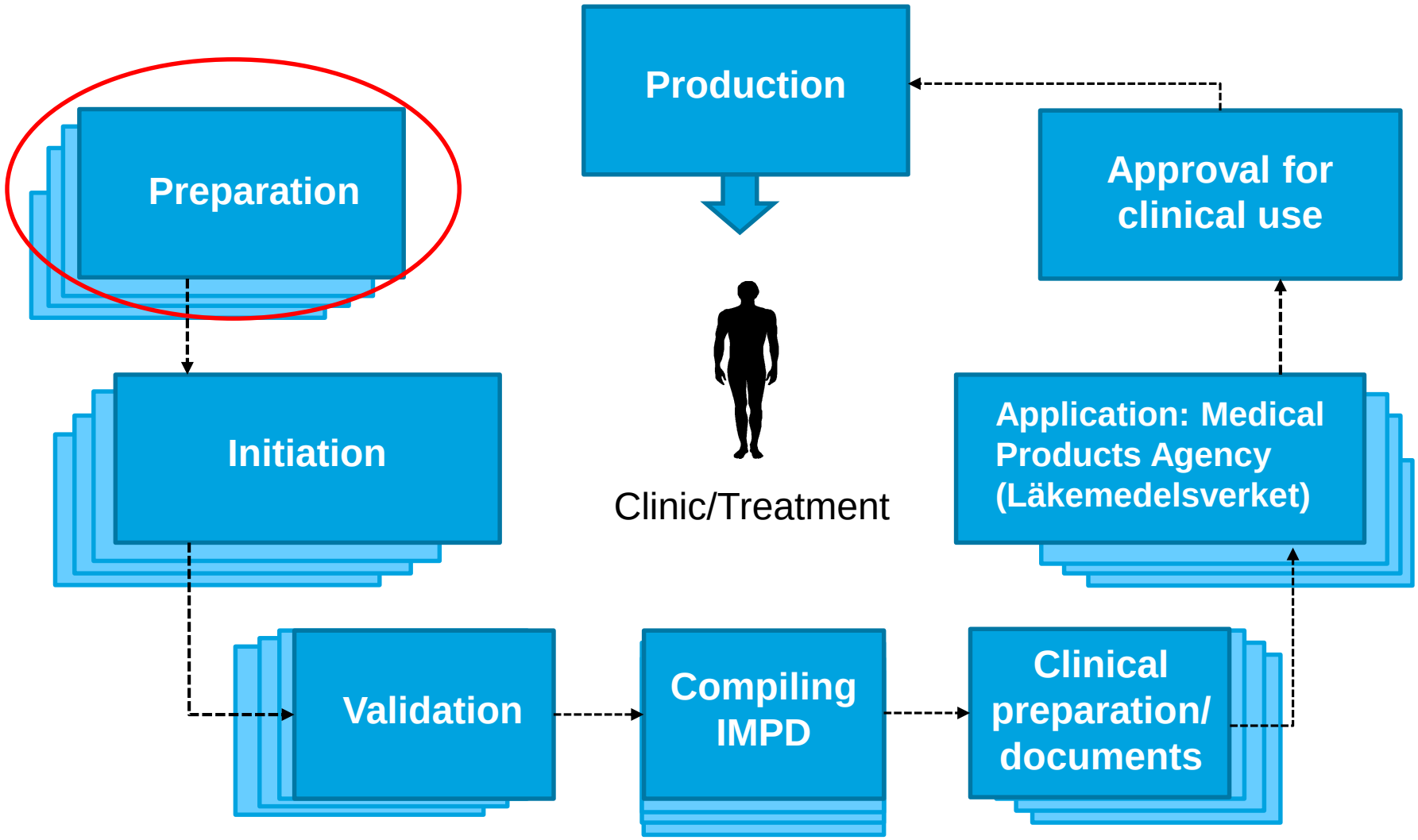
What is expected of our customers?

Vecura

A production unit that supports customized GMP production processes

- GMP Expertise
- Clean room facilities work flows
- Validated quality analyses
- **Quality system** required for ATMP/cell therapy production (based on European GMP regulations and guidelines)

From R&D to clinic



What is expected before you move your project to Vecura?

Product Specification

What are the essential features of the product?

A product specification is used for quality control of your product

Critical parameters?

- Sterility
- Endotoxin
- Phenotype?
- Functional properties?

Limits/ranges?

- Cell number?
- Viability?
- % expression of phenotypic markers?

Dose?

Rationale?

A defined process

A process that is clearly defined in each step and that can be repeated with the same results **in the right scale**

Process development?

Critical steps and controls?
Example: cell count

Scale?

Starting material?
Blood?
Biopsy?

Raw materials/Reagents?
Animal/human derived components?
Quality? Research only? Certified?
Traceability? Risks?

Equipment?

Clinical protocol?
Patient group?
Pre-treatment?

Responsible persons

Sponsor?

Principal Investigator?

Project coordinator?

"I believe we've found the weakest link."

Risk assessment

Product inherent

What risks for the patient/risks for a failed treatment may arise from the ATMP per se?

- Tumorigenicity?
- Unwanted immunogenicity?
- Unwanted tissue formation?
- Other?

Production related

What risks for the patient/risks for a failed treatment may arise from the production of the ATMP?

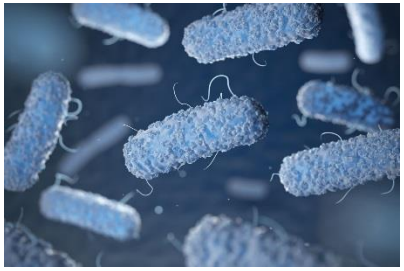
- Raw materials of biological origin? Source? Tests?
- Contaminating cell populations?
- Aseptics?
- Etc, etc, etc...

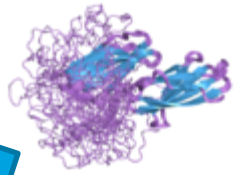
Risk assessment of Raw Materials

Supplier? Tests? Components of biological origin?

Traceability/Documentation?

Risk assessment of Raw Materials





Purification step?
- Components?

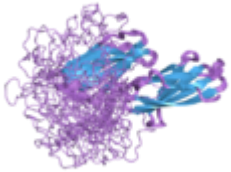
Growth medium?
- Components?

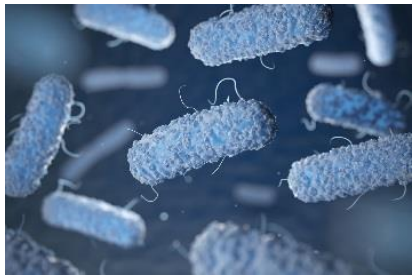
Peptone
Most often obtained by enzymatic digestion or acid hydrolysis of natural products, such as animal tissues, milk, plants or microbial cultures.

Risk assessment of Raw Materials

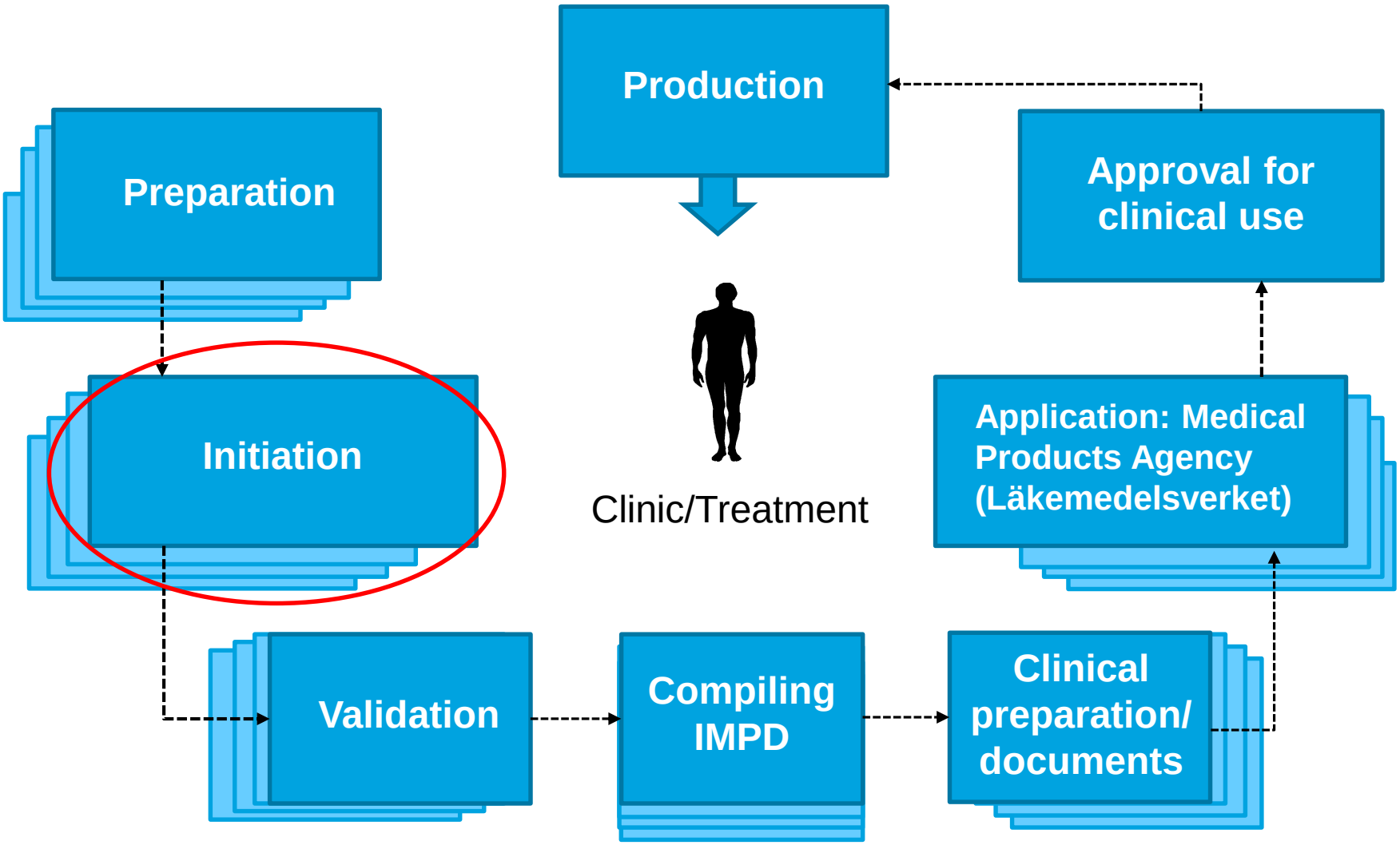
- At what facility is the blood drawn?
- What donor pool is used and how large is it?
- What tests are performed on individual donors and on collected pool of plasma?
- How is the plasma treated to minimize risk of transferring viruses/ other disease causing agents?
- Where is the purified HSA manufactured?

Risk assessment of Raw Materials





From R&D to clinic

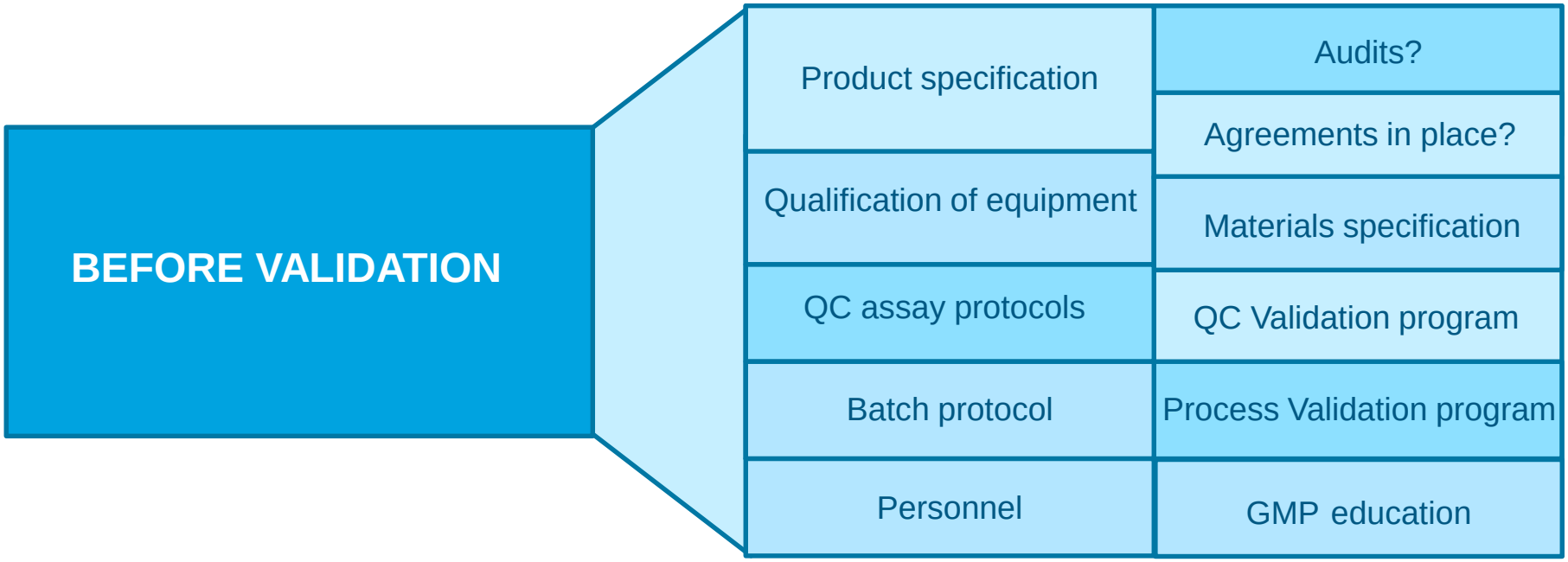


What happens at Vecura before validation/verification of a process?

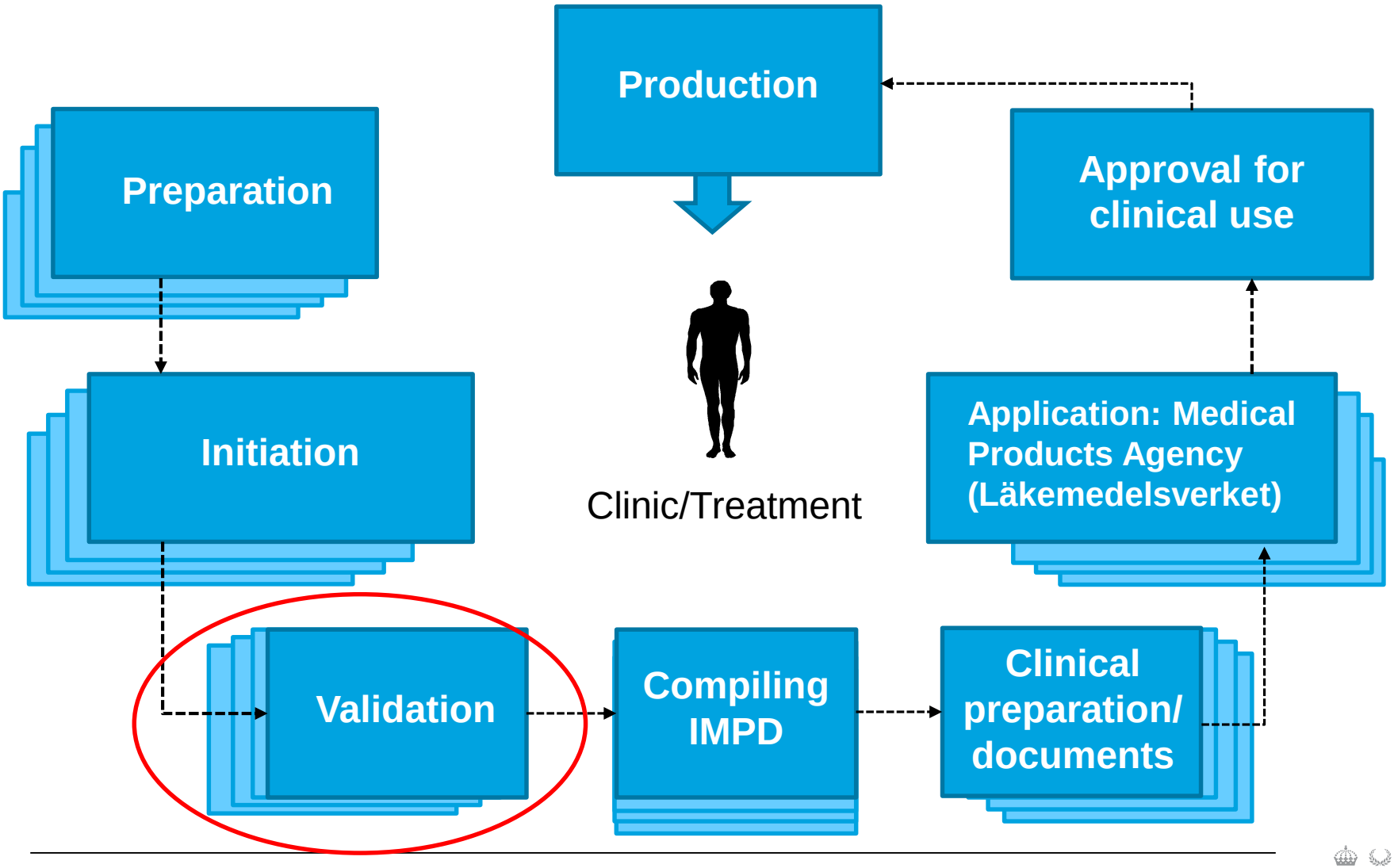
What does validation/verification mean?

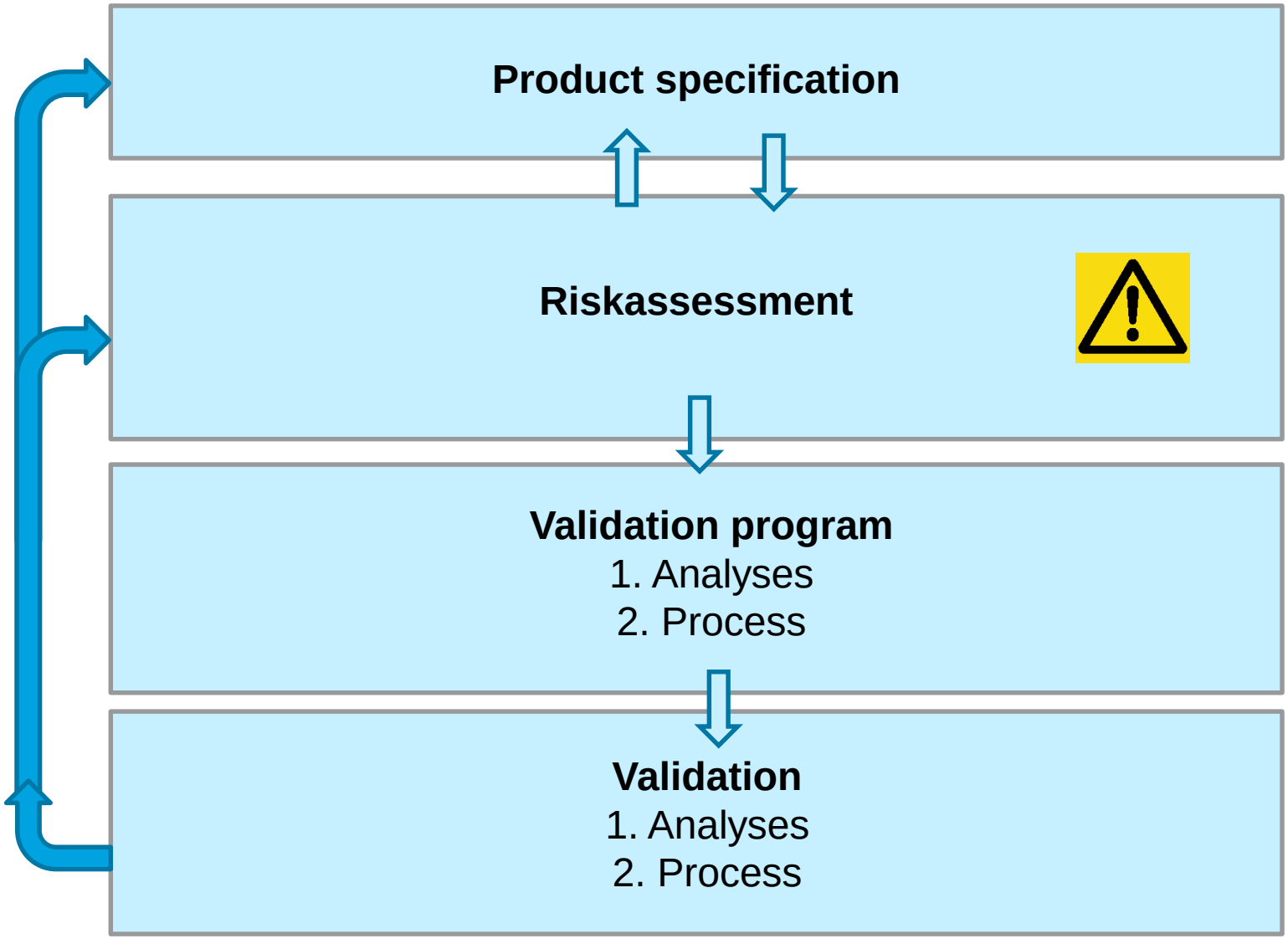
- Performed in the same way each time with equal results
- Performed in the right scale
- Performed using valid/risk assessed materials/reagents
- Performed with validated/certified control methods
- Performed with controlled equipment
- Environmental and operator monitoring
- Fulfills product specification every time
- Well documented, documentation approved by Quality management staff.

Not documented = not performed!


BEFORE VALIDATION
Product specification
Audits?
Agreements in place?
Qualification of equipment
Materials specification
QC assay protocols
QC Validation program
Batch protocol
Process Validation program
Personnel
GMP education

From R&D to clinic




Product specification
Riskassessment
Validation program
1. Analyses
2. Process
Validation
1. Analyses
2. Process

VALIDATION

- Methods of analysis
- Equipment
- Clean room
- Manufacturing process
- Stability
- Transport
- Qualification of personnel

Describes all the steps and include documents needed for manufacturing and certification/release

- Product specification
- Materials
- Critical steps
- QC Analyses
- Work flow charts
- Batch protocols
- Agreements
- Monitoring strategy
- Certification- and delivery documents
- Shelf life/storage

From R&D to clinic