VACCINES: FROM IDEA TO PRODUCT

VACCINE DEVELOPMENT
6 - 18 YEARS

RESEARCH AND DEVELOPMENT TAKES 1-10 YEARS

ANIMAL EXPERIMENTS TO TEST SAFETY OF VACCINE

PRODUCTION OF ANTIGENS

IDENTIFICATION OF POSSIBLE ANTIGENS AND FORMULATIONS

CLINICAL DEVELOPMENT TAKES 5-8 YEARS

PHASE I CLINICAL TRIAL ON A SMALL GROUP OF HEALTHY ADULTS TO TEST SAFETY OF VACCINE

PHASE II CLINICAL TRIAL ON A LARGER NUMBER OF PERSONS FROM THE TARGET GROUP TO TEST VACCINE EFFICACY

PHASE III CLINICAL TRIAL ON VERY LARGE GROUP TO FURTHER CHARACTERIZE THE VACCINE

UPSCALING AND REGISTRATION TAKES 3-5 YEARS

UPSCALING OF VACCINE PRODUCTION AND REGISTRATION OF VACCINE TO THE DEDICATED FEDERAL MEDICINES EVALUATION BOARD

COMMUNICATION

GIVEN THE DURATION OF THE DEVELOPMENT AND PRODUCTION OF VACCINES, STRUCTURAL CONSULTATION BETWEEN THE GOVERNMENT AND THE FARMACEUTICAL INDUSTRY IS NECESSARY TO TIMELY ANTICIPATE (UN)EXPECTED CHANGES IN DEMANDS

RECEIVE RAW MATERIALS

BULK PRODUCTION AND RELEASE

PRIMARY PRODUCTION TAKES 1 YEAR ON AVERAGE

COUPLING

ANTIGENS

FORMULATION

ADJUVANTS

EXCIPIENTS

FILLING & RELEASE

PACKING & SHIPPING

MOST VACCINES HAVE TO BE TRANSPORTED AND STORED UNDER STRICT CONDITIONS BETWEEN +2 AND +8 DEGREES CELSIUS AND HAVE A LIMITED SHELF LIFE

SECUNDARY PRODUCTION TAKES 1 YEAR ON AVERAGE

QC IS SHORT FOR QUALITY CONTROL. 70% OF THE PRODUCTION TIME IS DEDICATED TO WAITING ON QUALITY CONTROL TESTS. THIS RANGES FROM TESTING THE RAW MATERIALS, TO TRAINING PERSONNEL, CHECKING AND CLEANING OF THE MACHINERY AND THE BUILDING, TO THE FINAL QUALITY CHECK OF THE VACCINE. QUALITY CONTROL TAKES A LOT OF TIME BUT IS CRUCIAL FOR THE PRODUCTION OF VACCINES.

VACCINE PRODUCTION
10 - 30 MONTHS

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