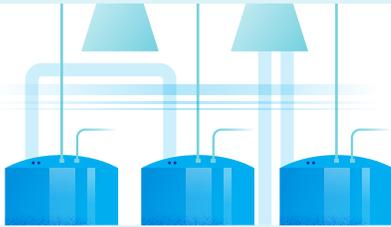


A HERITAGE AND FUTURE OF Manufacturing Cures

Pfizer's long heritage of creating cures is built on outstanding innovation not only in research and development but also in manufacturing.

1940s

Mass-producing penicillin during wartime DEEP TANK FERMENTATION



Pfizer invested millions of dollars to convert a vacant ice plant in Brooklyn into an innovative production facility.



CHALLENGE:

In 1942, World War II increased the need for penicillin, the first real defense against bacterial infections.

In just four months, Pfizer had perfected the deep-tank fermentation process and was producing **FIVE TIMES** more penicillin than expected.

Pfizer later received the Army-Navy "E" Award for this critical contribution to the war effort.

1990s

Making treatment safer for hemophilia patients BIOENGINEERED BLOOD FACTORS

In the 1990s, using groundbreaking recombinant DNA technology, Pfizer became the first to manufacture a clotting factor protein (Factor IX).

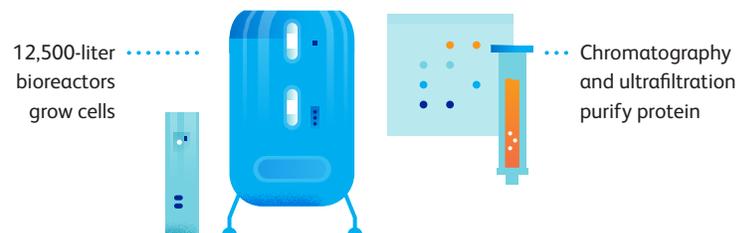
Unlike replacement factors extracted and purified from human-donated plasma, the manufactured product cannot transmit any pre-existing donor infections.²



CHALLENGE:

Individuals with hemophilia, a genetic disorder, cannot produce one of two clotting factor proteins necessary to stop bleeding.
Hemophilia A Factor VIII | **Hemophilia B** Factor IX

PFIZER CONTINUES TO PRODUCE FACTOR IX TODAY



TODAY

Manufacturing medicines when and where they're needed PORTABLE PRODUCTION FACILITIES³



Pfizer's portable, modular manufacturing facilities (PODs) are the first of their kind.

PHYSICAL FOOTPRINT

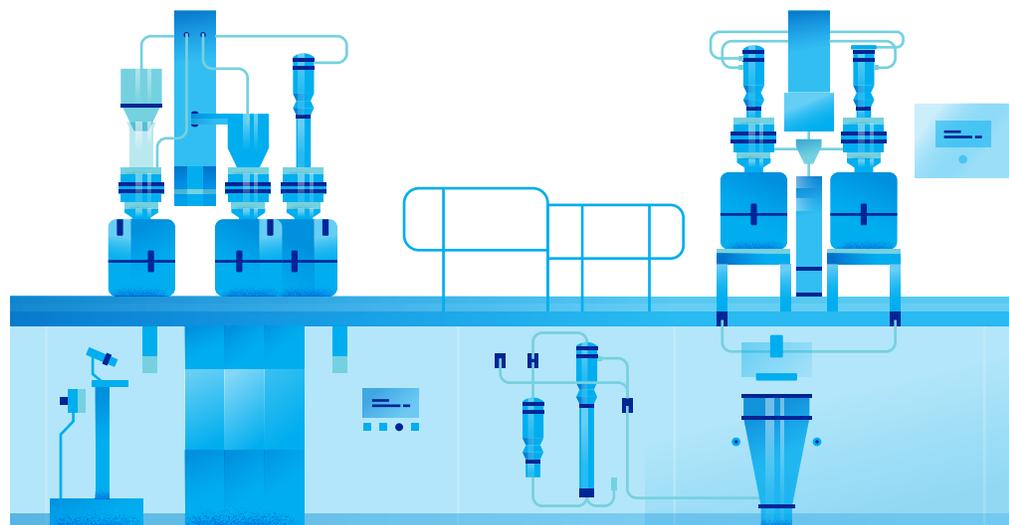
TRADITIONAL FACILITY

PODs

PODs have a 60-70% smaller physical footprint than traditional medicine manufacturing facilities and can be easily transported to areas of need on a flatbed truck.



The miniaturized equipment can be used for all stages of production leading to great flexibility.



Innovation in manufacturing is at the core of Pfizer's heritage, our present, and our future.

REFERENCES | ¹ www.pfizer.com/people/history | ² www.drugbank.ca/drugs/DB00100 |

³ www.pfizer.com/news/featured_stories/featured_stories_detail/pfizer_advancing_rapid_deployment_tablet_manufacturing_platform



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