Nanomedicine

By: Rapid Access International, Inc.

October 2021

Background on Nanomedicine

The medical application of nanotechnology is commonly referred to as nanomedicine. In 1995 the US Food and Drug Administration (FDA) approved the first cancer nanomedicine, called Doxil. The drug has been used to treat a range of adult cancers, including ovarian cancer, multiple myeloma and Karposi's sarcoma.[1] Currently, there are more than 60 nanomedicines in different stages of clinical research and at least 16 nanomedicines are clinically approved for cancer treatment by either the FDA or authorities in other countries around the world.[2]

The benefit of nanotechnology as it relates to these cancer drugs is that it dramatically increases their safety and efficacy. Specifically, nanotechnology-based nanomedicine and delivery systems provide effective targeting, delayed release, prolonged half-life and reduced systemic toxicity. Compared with the traditional delivery methods of these drugs, the use of nanotechnology has significantly improved the delivery of drugs to the target.[3]

The Johns Hopkins Center for Nanomedicine explains this well with an example on their website:

> For example, treating cancer with current chemotherapy delivery techniques is like spraying an entire rose garden with poison in order to kill a single weed. It would be far more effective to spray a small amount of poison, directly on the weed, and save the roses. In this analogy, a cancer patient's hair follicles, immune cells, and epithelia are the roses being poisoned by the chemotherapy. Using nanotechnology, we can direct the chemotherapy to the tumor and minimize exposure to the rest of the body. In addition, our nanotechnologies are more capable of bypassing internal barriers, further improving upon conventional nanotechnologies. Not only is our approach more effective at eradicating tumors, but it also results in much higher quality of life for the patient.[4]

Growth of the Nanomedicine Market

Beyond the example of treating cancer, nanomedicine is also being used to treat a range of other chronic diseases, including cardiovascular disorders, diabetes, dementia, and others. Sadly, these are all areas of great and increasing demand. Already in 2021, the global market for nanomedicine is expected to grow to $221.12 billion from $190.83 billion in 2020. The market is expected to be worth $361.44 billion in 2025. These figures are from the Nanomedicine Global Market Report 2021, recently published by The Business Research Company.[5]

---

[1] "Explainer: what is nanomedicine and how can it improve childhood cancer treatment?". The Conversation. May 23, 2017. Accessed on November 1, 2021. Available at: https://theconversation.com/explainer-what-is-nanomedicine-and-how-can-it-improve-childhood-cancer-treatment-69897

[2] "Current Nanomedicines for the Treatment of Cancer". Biopharma PEG. May 12, 2021. Accessed on November 1, 2021. Available at: https://www.biochempeg.com/article/188.html

[3] *Ibid.*

[4] "What is Nanomedicine?". The Center for Nanomedicine | Johns Hopkins Medicine. Accessed on November 1, 2021. Available at: https://cnm-hopkins.org/what-is-nanomedicine/

[5] "Nanomedicine Global Market Report 2021: COVID-19 Growth And Change". The Business Research Company. October 2021. Accessed on November 1, 2021. Available at:

The instance of all of these chronic diseases is growing at high rates. Dementia in particular is growing at an astonishing rate. Alzheimer's Disease International has indicated that more than 50 million people are suffering from dementia globally. This figure is expected to reach 80 million by 2030 and 152 million by 2050. Similarly, the 19.3 million new cancer cases in 2020 is expected to reach 28.4 million new cancer cases in 2040.[6]

The major players in the nanomedicine market include the following companies:

Pfizer Inc., Nanotherapeutics Inc., NanoViricides Inc, Arrowhead Research Inc., Celgene Corporation, Bio-Gate AG, Merck AG, Ablynx NV, F. Hoffmann-La Roche AG, Nanospectra Biosciences, GE Healthcare, Gilead Sciences Inc., Novartis AG, Amgen Inc., and Sanofi.

With a strong growth rate and many more nanomedicines than are currently approved undergoing clinical research, it can be expected that this field will be a key driver for dealmaking in the coming years. One of these companies, Celgene, was acquired by Bristol-Myers Squibb in late 2019. It operates as a wholly-owned subsidiary of Bristol-Myers Squibb.

https://www.reportlinker.com/p06177525/Nanomedicine-Global-Market-Report-COVID-19-Growth-And-Change.html?utm_source=GNW

[6] *Ibid*.