

“Magic Arms”: The Future of 3D Printing and Its Impact on Healthcare

By: Jason Poore
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In the past, doctors and researchers were limited in the types of individualized devices they could create for their patients; now, 3D printing presents the possibility of creating almost any device, limited only by their imaginations. Associate Jason Poore met with Dr. Tariq Rahman, Principal Research Engineer at Nemours Biomedical Research to discuss his MEDx Talks presentation on how 3D printing will impact the medical field and its vast potential for the future.

how were you first introduced to 3D printing in the medical field?

I am the Principal Research Engineer at Nemours Alfred I. duPont Hospital for Children and Director of the Center for Orthopedics Research and Development. I am also the inventor of the Wilmington Robotic Exoskeleton (WREX), which is a commercially successful medical device used to assist children with arm movement difficulty. I first became involved with 3D printing many years ago when Nemours purchased a 3D printer for manufacturing prototypes and one-offs for rehab, orthotics and robotics.

Tell us about the first success you had with WREX?

We fitted a two-year-old girl with a printed exoskeleton that was lightweight, customizable and with a quick turnaround for prototypes. Here, we had a younger than usual patient who couldn't move her arms but could walk, so the challenge was to make a lightweight exoskeleton – which is where the 3D printer came in. Over a few weeks, we tweaked and modified the exoskeleton with printed parts that would have taken much longer had we machined them. She wore it for a few years to assist in her arm movement. After her successful procedure, we were able to fit more children with a modified light exoskeleton.

What should healthcare professionals know about 3D printing and its impact on the medical field?

3D printing has become ubiquitous and low-cost in many fields including manufacturing, education, hobby and healthcare. It is used to assist in surgery planning, printing devices and orthotics/prosthetics and has enormous potential for printing organs and cells in the near future. Technology and surgery may be customized for individual patients, which goes along with customized or precision medicine that is being increasingly adopted.

Where do you see 3D printing in the medical field heading in the next three to five years?

Surgery planning with multicolor, multiple material prints will become commonplace. This will provide a powerful tool, in addition to imaging, to improve surgery and implant procedures.

3D printing will be just one of the topics explored at MEDx Talks 2019 at World Café Live on April 30th in Philadelphia, PA. [Learn more](#) about 3D printing and other presentations at this year's MEDx Talks.

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