


Benefits of using 3D printing in healthcare

3D printed, patient-specific anatomic models are transforming care and offering many benefits to hospitals, surgeons, patient care teams, and patients.

 **40-50M¹**
Surgical procedures/year

With 40-50 million surgical procedures carried out annually in the United States alone, the opportunities for 3D printing in the healthcare market are extensive. Despite working in a highly regulated healthcare industry, the 3D printing ecosystem is creating new technologies, materials and use cases that are being continuously tested in ways that can help create better patient and provider experiences.

3D benefits

- Hospitals
- Surgeons
- Care Teams
- Patients

Hospital benefits

\$1.2B²

3D printing market valuation = more innovation and potential for future mass usage

14.1%³

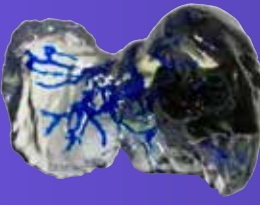
3-year CAGR indicates a high growth category, as 3D becomes more standardized

62⁴

Minutes average operating room time savings = save operational resources and labor



Patient experiences = loyalty, higher potential revenue over the care continuum

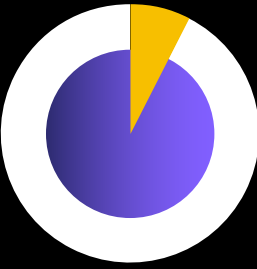


Innovative models and technology can help attract resources, donors, and patients

\$3,720⁵

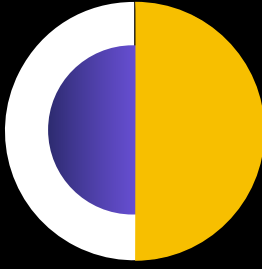
Average cost savings per case

Surgeon benefits



7.6%⁶

Time savings on average per case, which can help increase flexibility on case load



50%⁷

Of cases redefined their surgical approach with a 3D model



Pre-surgical planning options



Can help select the right sized devices prior to surgery



Instills confidence and can improve certainty with ability to practice⁸



Cadaver-free training options

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3D printing has the potential to significantly improve the research knowledge and the skills of the new generation of surgeons, the relationship between patient and surgeon, increasing the level of understanding of the disease involved, and the patient-specific design of implantable devices and surgical tools and optimize the surgical process and cost.

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— National Institutes of Health⁹



Care team benefits



Effective tool for providing education



Patient-specific model offers another way to explain a patient's unique situation

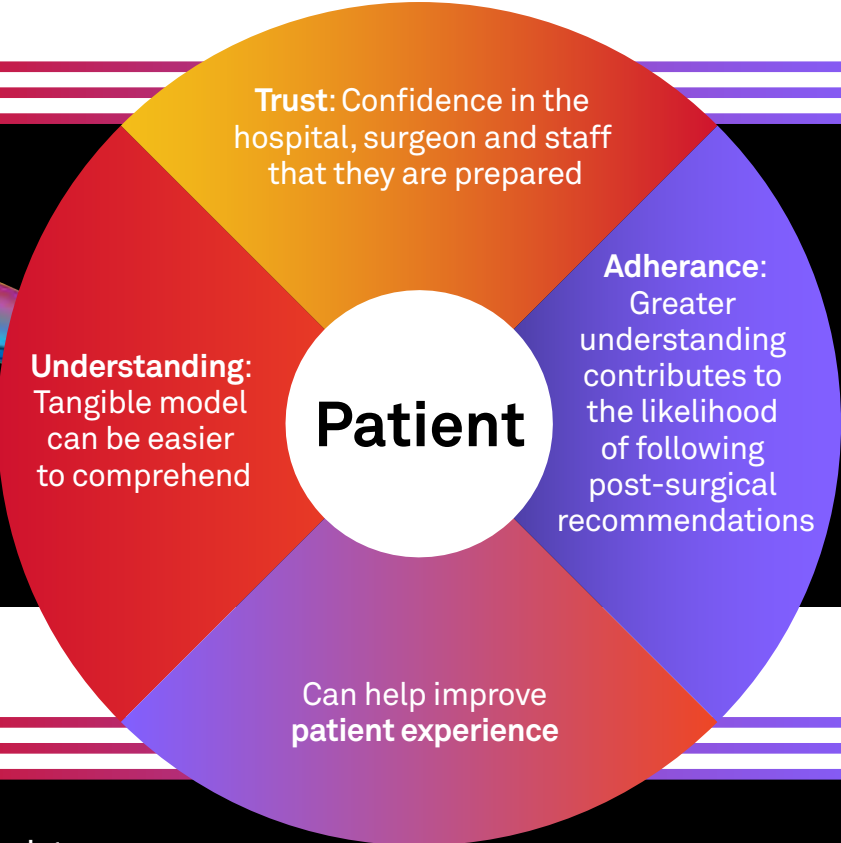


Can help with gaining informed consent



Better care team collaboration by seeing the same patient-specific anatomic model

Patient benefits



Advancing healthcare is essential to who we are as individuals and to our society. 3D printing in healthcare is changing the way hospitals, physicians, care teams and patients approach, collaborate and educate individual cases in ways that can help build trust, engagement and cost-savings.

At Ricoh, we are committed to innovation and development of the 3D printing industry to bring better experiences to our customers. As a leading, global manufacturer, we have the power to scale; offer managed services, both off-site and on-site; and utilize our large team of services and IT technicians in the U.S. We offer access to software, hardware, personnel, and robust quality assurance for point-of-care or centralized 3D model production. Since the outputs of 3D printing for use in healthcare are often considered a medical device, we have obtained FDA 510(k) clearance for diagnostic anatomic models within craniomaxillofacial (CMF), orthopedic, cardiovascular, neurological, gastrointestinal, genitourinary, and breast applications.¹⁰



For more information, questions, or to request a model, please [contact us](#).

¹ Cision, United States Hospital Markets Report 2022-2028: Increasing Number of Surgeries / Rising Cases of Accidents / Increasing Number of Cancer Cases / Integration of AI in the Hospitals. January 20, 2023.
^{2,3} IDC, IDC Worldwide 3rd Platform Spending Guide: Healthcare - Forecast 2022.
^{4,5} American Radiology, Volume 27, Issue 8, Medical 3D Printing Cost-Savings in Orthopedic and Maxillofacial Surgery: Cost Analysis of Operating Room Time Saved with 3D Printed Anatomic Models and Surgical Guides. August 2020.
⁶ NIH, Cost-Benefit Analysis of Three-Dimensional Craniofacial Models for Midfacial Distraction: A Pilot Study. August 3, 2016.
⁷ NIH, Three-dimensional printed models for surgical planning of complex congenital heart defects: an international multicentre study. December 1, 2017.
⁸ Plastic and Reconstructive Surgery - Global Open, Three-dimensional Printing in Plastic Surgery: Current Applications, Future Directions, and Ethical Implications. March 2021.
⁹ NIH, The Role of 3D Printing in Medical Applications: A State of the Art. March 21, 2019
¹⁰ Ricoh, RICOH 3D for Healthcare Receives Expanded FDA 510(k) Clearance for 3D Anatomic Modeling of Soft Tissue. May 3, 2023..